INSTRUCTION MANUAL

TELECOM LINES CDN
FOR LSS-6010/6030

MODEL LSS-INJ6400TEL

NOISE LABORATORY CO., LTD.

2nd edition(2.01) 2001/3

AEE00013-00E-1B

1. Important Safety Precautions

Thoroughly understand the following precautions before use, as they are important matters for handling this unit in safety.

1. As the surge output part of this unit and Lightning Surge Simulator (Models LSS-6010/6030) generate high voltage and great electric current (6kV 3000A maximum), carefully handle it. Mishandling or careless operation may result in a fatal wound.
2. This unit and Lightning Surge Simulator (Models LSS-6010/6030) cannot be used in an explosive area, fire prohibited area, etc. Use of this unit in such an area is liable to cause combustion or ignition.
3. A person who has a pacemaker on should not operate this unit and Lightning Surge Simulator (Models LSS-6010/6030), and also should not enter the area where they are operating.
4. Test rig to be used with this unit should be capable of withstand voltage at least 6kV. EUT test using this unit should be performed in a protective enclosure or cover against scattering broken pieces, fire electric shock, etc.
5. When make connections between this unit, associated surge generator, accessories, optional equipment and other equipment, press STOP SWITCH of the Lightning Surge Simulator and check to see that STOP SWITCH of the Lightning Surge Simulator is lighting up beforehand. And then turn off a breaker for LINE INPUT of this unit beforehand. Otherwise, you may receive an electric shock.
6. When make connections between Lightning surge simulator (LSS-6010/6030), remain as turning off INJECTION INPUT circuit breaker. It may be damaged if the current power is supplied to this unit.

2. Application Form for Instruction Manual

We place an order for an instruction manual.

Model: LSS-INJ6400TEL

Serial No.: _____

Applicant:

Company name: _____

Address: _____

_____

Department: _____

Person in charge: _____

Tel No.: _____

Fax No. _____

Cut off this page "APPLICATION FORM FOR INSTRUCTION MANUAL" from this volume and keep it for future use with care.

When an INSTRUCTION MANUAL is required, fill in the above Application Form and mail or fax it to the following sales department of our company.

To: Noise Laboratory Co., Ltd.
1-4-4, Chiyoda, Sagamihara City, Kanagawa Pref.,
229-0037 Japan
Tel: +81-(0)42-712 2051 Fax: +81-(0)42-712-2050

Cut line

3. Table of Contents

4. Preface

4-1. Preface

We thank you very much for your purchase of TELECOM LINES CDN for the LSS-6010/6030 series, MODEL LSS-INJ6400TEL. This manual contains how to use the LSS-INJ6400TEL and other important information. In order to obtain the highest performance from your LSS-INJ6400TEL, thoroughly understand the contents of this manual and use as ready reference for operation.

Please read the instruction manual of the LSS-6010/6030 for the details on the operation of the LSS-6010/6030 series Lightning Surge Simulator..

- **This Instruction Manual will help operators handle and utilize the TELECOM LINES CDN, LSS-INJ6400TEL in safety.**
- **Keep this Instruction Manual in a place where it is readily available.**

4-2 Functions and capabilities

1. A Coupling/Decoupling Network (abbreviated CDN) unit, used in conjunction with the LSS-6010/6030 series Lightning Surge Simulator, applies combination waveform pulses and telecom pulsed to unshielded symmetrically operated lines of equipment under test. The circuit configuration complies with the IEC 61000-4-5 standard prescription.

2. Resistor of a coupling network; 40 Ω and 25 ohm impedance matching resistors are provided for combination wave and for 10/700 μ s wave, respectively.

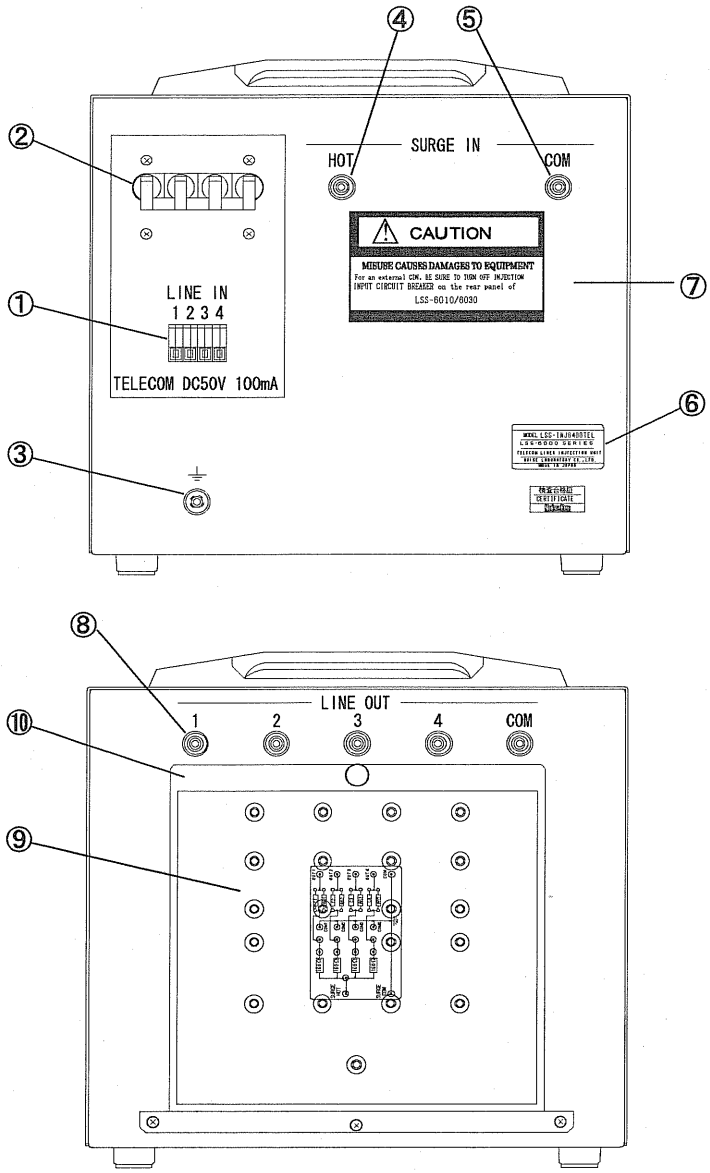
3. LSS-INJ6400TEL is used for the four-line test. Optional resistor boxes (Model 06-00053A) are required for the 2-line test to strictly meet the matching resistance requirements prescribed in the IEC 61000-4-5.

5. Appearance of the Unit and Position of Serial Number

5-1 Appearance of the unit

Measurement: W(297) x H(262) x D(250) mm

Weight: Applox.10kg



Dimension: (W) 297 x (H) 262 x (D)250 mm

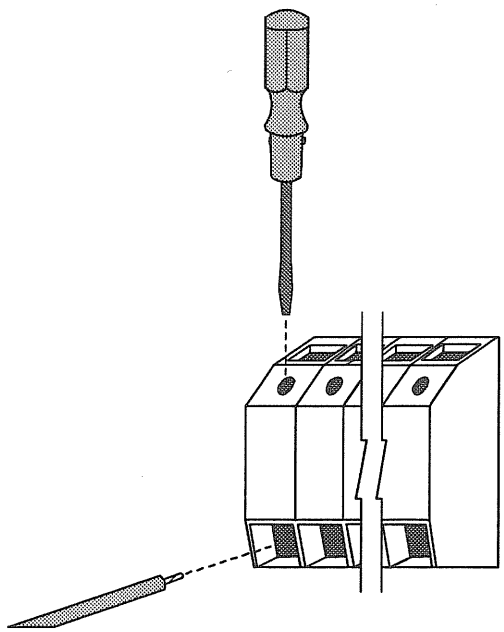
Weight: Approx. 10kgs

5-2 Name of each part and function

① Telecom line input terminal base

Terminal bases to supply DC power supply for the telecom lines injection tests. For 2-line test, prepare the optional resistor boxes (Model 06-00053A) and use terminal 1 and 2.

- Never conduct a test with the telephone exchange directly connected to TELECOM LINE input terminal base. The exchange may be sometimes damaged by surge back voltage. Connect DC power supply and perform an artificial test.
- When performing a test for the EUT in a state of communication, use a dummy exchange etc. Fully make surge protection in this case.



As shown in the left Fig., peel off the sheath of the cable and insert it in the connector. As there is a screw hole, in which the cable is clamped, on the upside of the connector, tighten the screw (slot head) with a screw driver to fix it securely so that the cable may not be disconnected.

⚠ DANGER 危険

- The cable set screw is electrically connected to the conductive part inside the terminal base. Therefore, when tightening the screw, be sure to turn off power on the cable side beforehand.

② Telecom line breaker

Breaker to turn on or off the telecom line.

③ FG terminal

FG terminal (frame ground) of this unit. Be sure to ground this terminal when using this unit.

④ SURGE HOT terminal

Surge input port from the surge HOT port of the associated generator. Connect this terminal with L1 terminal of LSS-6010/LSS-6030 Lightning Surge Simulator with the supplied surge input cable.

⑤ SURGE COM terminal

Surge input port form the surge COM port of the associated generator. Connect this terminal with L2 terminal of LSS-6010/ LSS-6030 Lightning Surge Simulator with the supplied surge input cable.

- When using this unit, be sure to turn off the LINE Switch of LSS-6010/LSS-6030 beforehand.

  When AC or DC power is supplied to SURGE HOT terminal or SURGE COM terminal of this unit by LSS-6010/LSS-6030 Lightning Surge Simulator, this unit may be damaged.

⑥ Serial number label and Certificate label

Label which shows the model name, serial number of this unit and passing an inspection.

⑦ CAUTION Label

MISUSE CAUSES DAMAGE TO EQUIPMENT

For an external CDN be sure to turn off INJECTION INPUT circuit breaker on the rear panel of LSS-6010/6030.

⑧ Telecom line output terminals (OUT 1～OUT 4, COM)

Injection output terminals for the telecom line. Since high voltage surge is output from these terminals, carefully handle it. Mishandling or careless operation may result in a fatal wound.

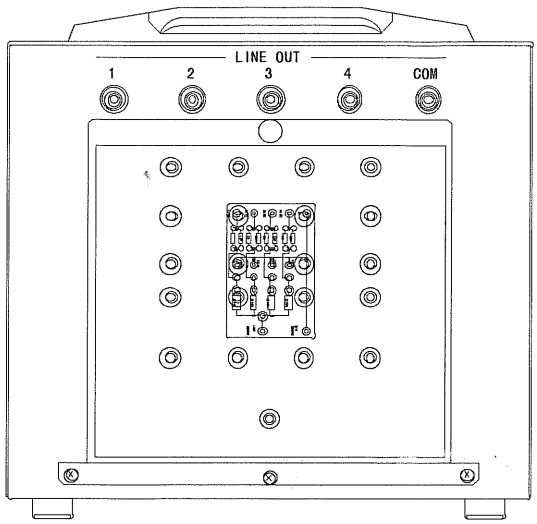
⑨ Test setting part

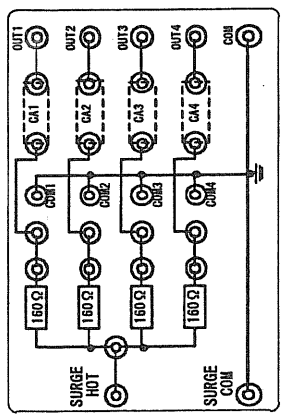
Each test condition is set on this panel.

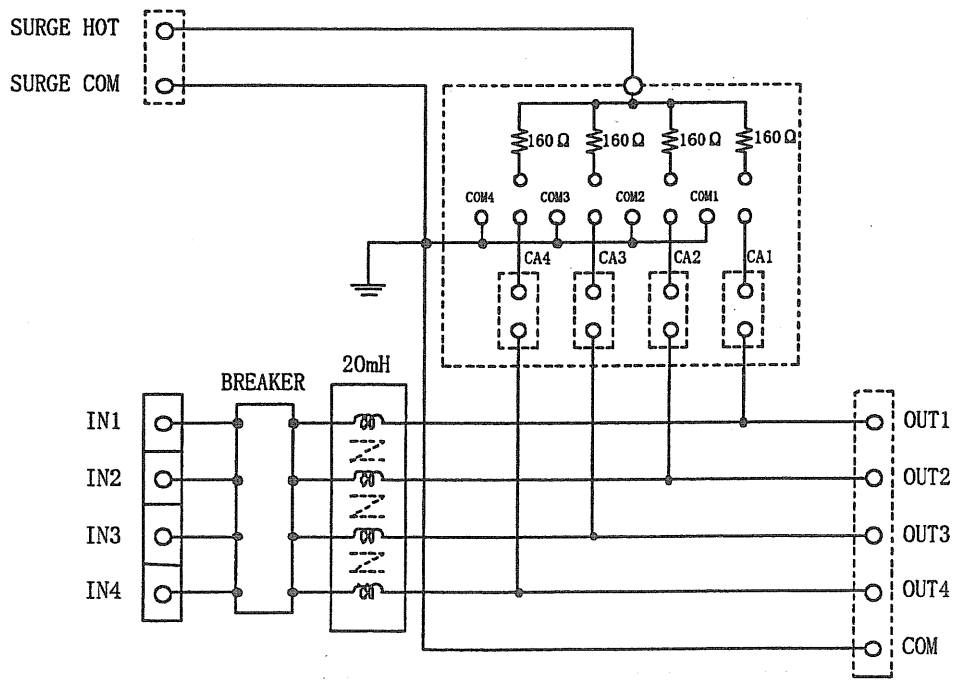
⑩ Protective cover

High voltage is generated at each connector/port under the cover. Be sure to cover the test setting part before performing a test.

5-3 Test condition setting part





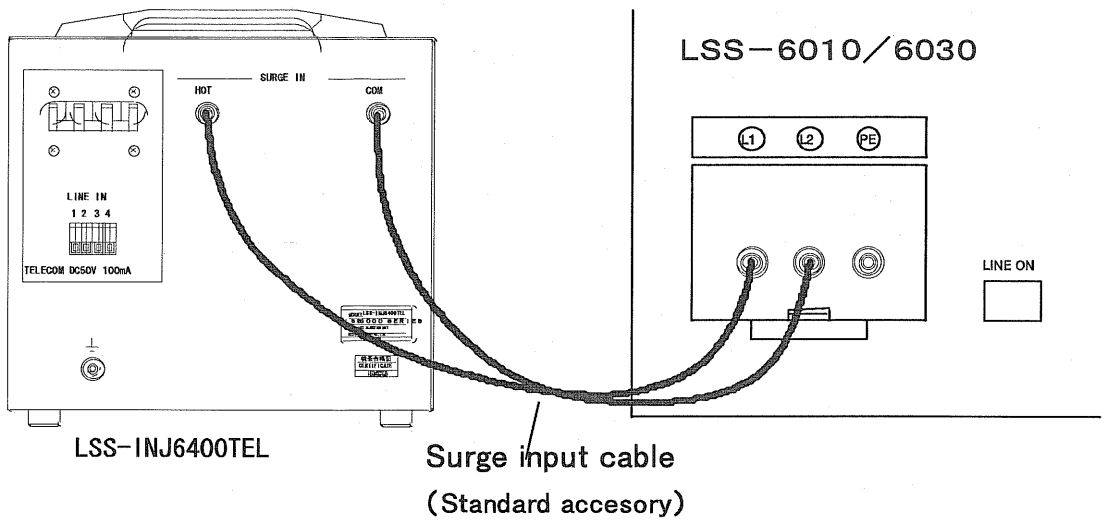


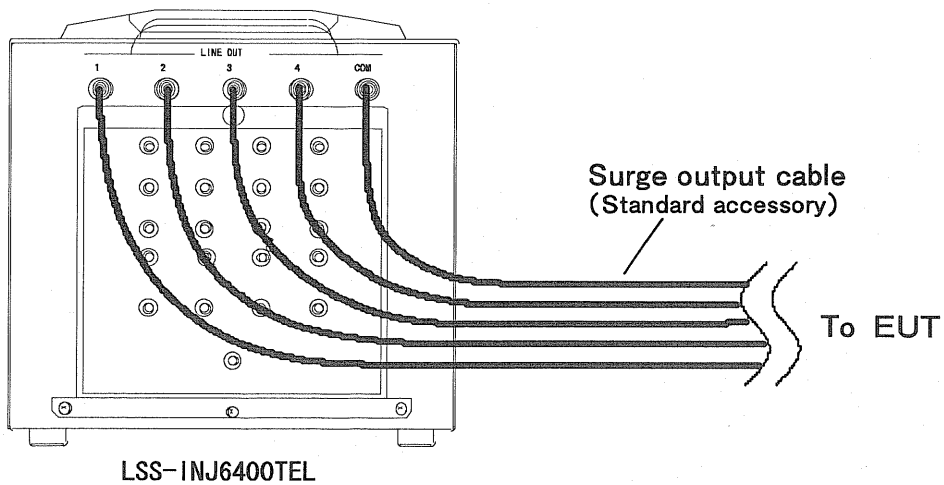
BLOCK DIAGRAM

6. How to connect equipment

6-1. How to connect equipment

Connect this unit to the LSS-6010/6030 Surge Simulator and to the EUT as shown in the following figure.





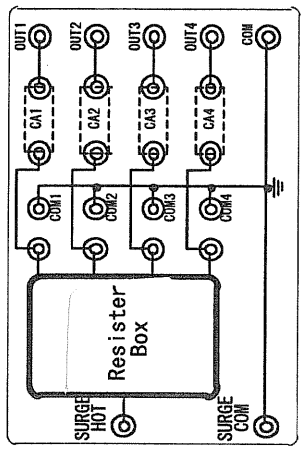
※As shown in the above figure, use the attached surge input cable and surge output cable. Be sure to insert each plug of the cables into each socket firmly.

※Be sure to turn off the INJECTION INPUT circuit breaker of LSS-6010/6030 always.

6-2. How to set the test setting unit

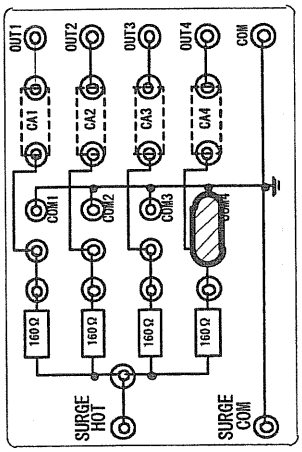
1. How to use the resistor box

An appropriate matching resistor needs to be used depending on the selected test waveform (combination or 10/700 μ s). This unit has 4 pieces parallel 160 Ω resistors (set up for the combination wave) built in as shown in the figure of Clause 5-3. When performing the 10/700 μ s waveform test, the supplied resistor box needs to be fitted as shown in the following figures so that resistor value becomes 100 Ω. When performing the 2-line test, connect the optional resister boxes (06-00053A): for combination wave or 10/700 μ s.



2. How to set surge return phase

Surge return phase can be selected by inserting a supplied short plug into COM 1~ COM4 terminals as shown in the following figure. In the following figure, a short plug is inserted into the COM4 terminal.



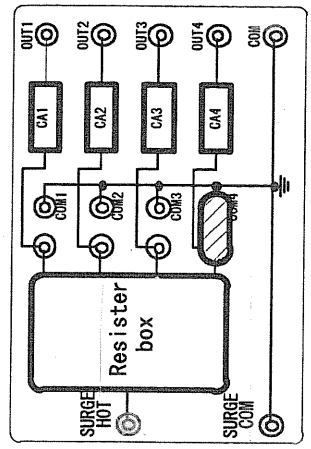
3. How to set the two-line /four-line

When performing a test for the two-line type EUT, the optional resistor boxes (Model:06-00053A) are required

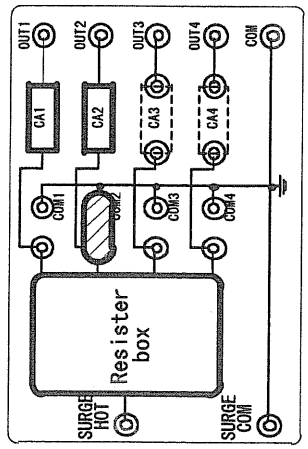
Telecom line input terminal bases (1 and 2) and telecom line output terminals (OUT1 and OUT2) are used and capacitor/gas arrester unit is connected as shown in the following figure,

Be sure to remove the capacitor/gas arrester units of OUT3 and OUT4 when performing the two-line test.

Set up for the 4-line test (surge return phase: COM4)



Set up for the 2-line test (surge return phase: COM2)



NOTICE

When injecting the combination waveform to this unit, set the IMPEDANCE switch of the Lightning Surge Simulator (Model LSS-6010/6030) to "HIGH" position. When injecting the 10/700 μ s to this unit, set the IMPEDANCE switch of the Lightning Surge Simulator (Model LSS-6010/6030) to "LOW" position.

7. Specifications

Specifications of LSS-INJ6400TEL

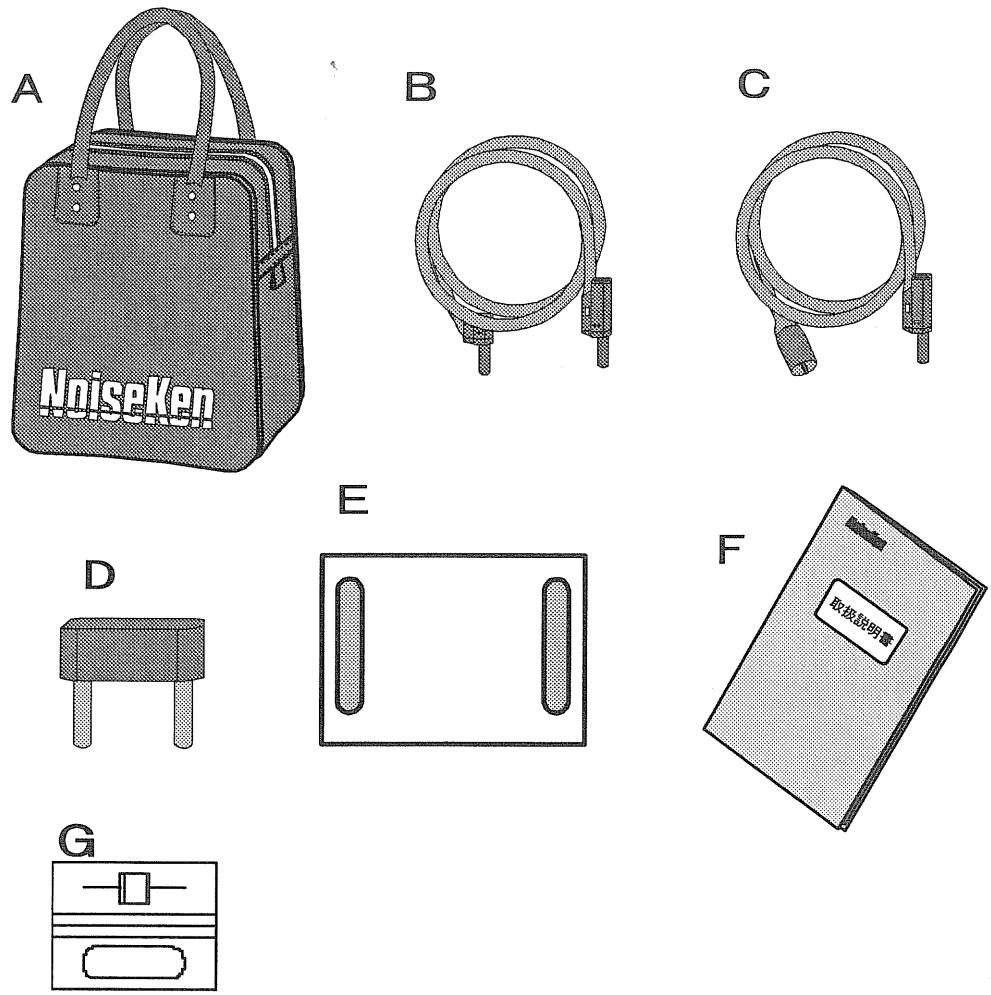
Items	Specifications
Surge waveform and maximum input level	Combination waveform and 10/700 μ s waveform 6kV
Maximum EUT power	50V DC 100mA
Number of lines	4 *
Decoupling coil	20mH in each line
Matching resistor	40 Ω for combination wave 25 Ω for 10/700 waveform
Dimension	(W) 297 X (H) 262 X (D) 250 mm
Weight	Approx. 10 kgs

- *Optional resistor boxes (Model 06-00053A) are required for 2-line test to strictly meet the matching resistance requirements prescribed in the IEC 61000-4-5*

Specifications and functions of this unit are subject to change without notice.

8. Standard accessories

8-1. Standard accessories



The following accessories are contained:

	Quantity
A: Accessory bag	1
B: Surge input cable (1m)	2
C: Surge output cable (1m)	5
D: Short plug	1
E: Resistor box (for 10/700 μ s)	1
F: Instruction manual	1
G: Capacitor/gas arrester unit	4

9. Warranty

1. For period of one (1) year from date of delivery, this unit and its accessories will be repaired free of charge.
2. However, replacement of consumable parts during the warranty period shall not be covered by this warranty.
3. If some part fails during this warranty period, such part will be repaired or replaced free of charge, or it will be changed for equivalent when needed. In this case, Noise Laboratory shall decide on the content of repair.
4. Any trouble or damage due to careless handling or remodeling on the user side and any resultant damages shall not be warranted. In this case, the warranty shall be void, even if the customer or any third party interferes with the warranty condition.
5. Once product has been delivered to the customer, our company shall have no responsibility for a damage to such product during transit.
6. Any trouble or damage due to fire, earthquake or other natural disaster shall not be covered by this warranty.

10. Maintenance

1. When repair, maintenance or internal adjustment of the unit is required, a qualified service engineer takes charge of such work.
2. Maintenance on the use side is restricted to the outside cleaning and functional check of the unit.
3. When cleaning the unit, turn off the switch of this unit and the connected equipment and disconnect the plug socket beforehand.
4. Avoid using chemicals for cleaning. Otherwise, the coating of the unit may peel off or the sight glass may be broken.
5. Do not open the cover of the unit.

11. Noise Laboratory Support Network

- If a symptom which seems a trouble is found, inform the model name and serial number of the product together with the symptom to Noise Laboratory or your nearest sales agent of Noise Laboratory.
- When the product is returned to Noise Laboratory, write the state of the trouble, contents of your request, mode name and serial number in a repair order, and pack the product and repair order sheet in the former package of equivalent suitable for transit and send them back.

Contact address: Noise Laboratory Co., Ltd. / International Dept.
1-4-4, Chiyoda, Sagamihara City, Kanagawa Pref.,
229-0037, Japan
Tel: +81 (0)42 712 2051 Fax: +81 (0)42 712 2050

Noise Laboratory may not accept a repair order in the following cases:

1. More than 5 years have passed since sale of the product you request to repair discontinued. (Including high voltage relays and same other parts of which sale discontinued within 5 years.)
2. More than full 10 years have passed since product was delivered.
3. Repair parts for custom-made product are not available due to discontinued production and there is no replacement available.
4. Product was changed, repaired or remodeled without accepting our approval.
5. Product lost its original form

NOISE LABORATORY CO., LTD.

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