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## 1. IMPORTANT SAFETY PRECAUTIONS

As this product is a resistor to observe waveform of pulse generated by a pulse generator, it is always used with pulse generators. Read the instruction manuals of those pulse generators carefully, and fully understand matters about safety handling prior to usage.

## 2. PREFACE

We thank you for your purchasing Waveform Verification 2Ω Load MODEL: 06-00061A (hereinafter "the Unit"). Read this instruction manual ("the Manual") carefully prior to usage, thoroughly understand the contents of the Manual and use as ready reference for operation.

- The Manual will help you operate the Unit safely and make the most of use it, if you strictly follow the operational procedures and safety instructions.
- Keep the Manual where it is readily available.
- The Unit is a resistor used for observing waveforms of test pulses, e.g. test pulse 2a, 2b(24V), P5a prescribed in Annex D of ISO7637-2, under the 2Ω load condition equivalent to the condition prescribed in the standard.

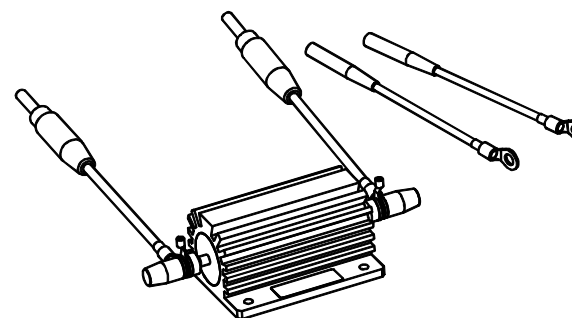
### § FEATURES

1. 2Ω 1% Non-inductive resistor
2. Its better overload characteristics can make itself smaller.
3. Good temperature coefficient

## 3. BASIC SAFETY PRECAUTIONS

1. Mishandling or careless operation may result in a fatal wound. 【Precautions for human body, operation, environments and connection】
2. When connecting the Unit to a pulse generator, be sure to stop the pulse output of the generator. Otherwise, you may get an electric shock. 【Precautions for human body and connection】
3. Connect the plug of the Unit to the output terminal of the pulse generator firmly. 【Precautions for human body and connection】
4. Our company and sales agents shall have no responsibility for any accident resulting in injury or death, any breakage or resultant damages due to irresponsible handling. 【Precautions for human body, operation, environments and connection】
5. If the Unit is used in conditions exceeding its tolerance level, it may result in not only damage or deterioration of characteristics of the Unit but also an electric shock to human body. 【Precautions for human body and connection】

## 4. ENCLOSED ITEMS



- Resistor..... 1 piece
- Cable (Big)..... Red · Black each 1 piece
- Cable (Small)..... Red · Black each 1 piece
- Protecting cap..... 2 pieces
- Terminal..... 2 pieces

## 5. OPERATION

For operation of each pulse generator, refer to the instruction manual of each generator.

### 1. Preparation of equipment

- The following description is the example of connecting of the Unit to ISS-7690+ISS-7650 (P5a waveform).
- To control the above test equipment, remote control software ISS-7601 and PC are necessary.
- Make "+" and "-" of DC LINE IN 3 terminals of ISS-7690 short-circuited and turn on DC LINE IN 3 breaker.

### 2. Connection between ISS-7690 and the Unit

- Connect the Unit to the output terminal HOT and GND of DC LINE OUT/PULSE of ISS-7690. Be sure to use the attached cable (big) or the cable (small) for this connection. In verifying waveforms from ISS-7610 or 7650, use the cable (small).

#### Notice

- In attaching and removing the connector, be sure to confirm a pulse is not generated.

### 3. Connection between measurement equipment and the Unit

Clip the terminal of the Unit with the high voltage probe and connect the probe to measurement equipment, such as an oscilloscope. Use a probe and measurement equipment which are satisfying requirement prescribed in the ISO7637-2 standard.

### 4. Setup of test equipment

- Turn on ISS-7690 and ISS-7650. Or turn on the whole system of ISS-7600.
- Start remote software ISS-7601 and select standard 【ISO 2003/2004 12V】 and pulse 【P5a】. Set parameters of the pulse as prescribed in

Annex D. The following table shows parameters of P2a, P2b (24V).

Parameter	P2a setup (12V, 24V)	P2b setup (24V)	P5a setup (12V/24V)
Severity Level	Free Edit	Free Edit	Free Edit
DC Input Selection	DC LINE IN 3	Incorporated Amplifier	DC LINE IN 3
UA	0.0V	0.0V	0.0V
UA Voltage Drop Compensation	0.0V	0.0V	0.0V
Us	50V	20.0V	100.0V/200V
Ri	2Ω	-	2.0Ω
td	50μs	2s	400ms/350ms
t1	0.2s	10.00s	60s
t12	-	1ms	-
tr	-	1ms	-
t6	-	1ms	-
t3	-	0.10s	-
Injection Times	Free	Free	Free

#### Notice

- For waveform verification, be sure to set UA 0.0V to avoid exceeding the rated Power. With UA voltage, current would continue flow into the Unit. In the Annex D of ISO 7637-2, UA is prescribed as 0V.
- The parameter of Annex D is recommendatory for waveform verification. If the Unit is used in the conditions exceeding its tolerance level of the rated power or short-term overload, it may result in deterioration of characteristics or burning of the Unit.

### 5. Pulse waveform verification

- Start remote software ISS-7601 and output pulses with using the software.
- Verify the pulse based on 【Tolerance specified in Annex D】 in the instruction manual of ISS-7650.

### 6. How to pull off cable (big)

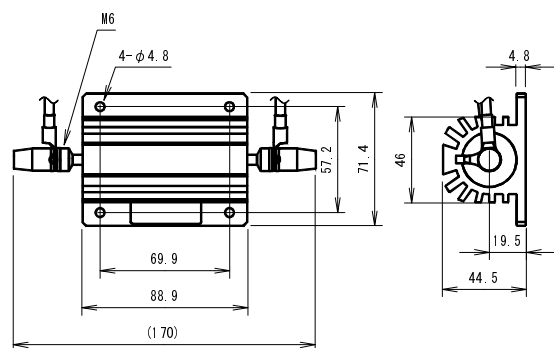
- The contactor of DC LINE OUT/PULSE terminal of ISS-7690 is produced by Multi-Contact AG with snap-in lock system. With this system, the plug is automatically locked when it was inserted into the socket. Pushing the plug deeper into the socket release the lock system and the plug can be pulled off under unlock status.

## 6. SPECIFICATIONS

Product name ..... Waveform Verification 2Ω load  
 Model name ..... 06-00061A

ITEMS	SPECIFICATIONS
Resistance	2Ω ± 1% Non-inductive (Without a cable) at 25°C
Temperature Coefficient	± 50ppm/°C
Rated Power	50W(Ambient temperature: less than 25°C) 15W(Ambient temperature: 200°C)
Short Term Overload	250W 5s(Ambient temperature: less than 25°C)
Withstanding Voltage	4.5kV
Usable Temperature	-55°C ~ +200°C
Weight	Approx. 450g (Without cables)

### 【Appearance】



## 7. WARRANTY

### Servicing terms

The following terms are applicable to servicing by Noise Laboratory Co., Ltd., (hereafter referred to as the Company) provided to maintain the intended performance of its products.

- Scope**  
The following terms shall apply only to products made by the Company.
- Technical servicing fee**  
In the event of a failure of a product within the warranty period (see warranty section), the Company will repair a product without charge. After the warranty expires, repairs will be billed at a nominal cost.
- Ownership of defective parts**  
Any defective part exchanged under the Company's servicing belongs to it.
- Limited liability**  
In the event that damages resulting from servicing by the Company are intentional or caused by negligence, the Company will pay the cost but at the purchase value of the relevant product maximum. But, notwithstanding the foregoing, the Company shall not be responsible for any incidental or consequential damages of any nature, including without limitation thereof loss of would-be profit or compensation demanded from a third party
- Refusal to offer servicing**

The company may not accept a repair order in the following cases:

- More than 5 years have passed since the product discontinued
  - More than 8 years have passed after delivery
  - Required component for servicing already discontinued and no alternative is available.
  - Product changed, repaired or remodeled without obtaining a prior permission from the Company.
  - Product severely damaged to the extent it has lost its original form
6. **Limited warranty**  
The company warrants its products to be free from defects in materials and workmanship under normal use and service for a period of one year from date of delivery. In the event of failure of a product covered by this warranty, the Company will repair the product or may, at its option, replace it in lieu of repair without charge.

Notwithstanding the foregoing, the Company shall not be responsible for any incidental or consequential damages of any nature, including without limitation thereof loss of would-be profit or compensation demanded from a third party. This warranty is valid only in Japan.

- Scope**  
This warranty shall only apply to products made by the Company.
- Period**  
One year from date of delivery. The warranty may be valid in 6 months after servicing if the same failure on the same component has repeated.
- Exclusions**  
The followings are exclusions from this warranty:
  - Consumable parts (including HV relay)
  - Failure caused by misuse, neglect, accident or abnormal conditions of operation
  - Failure caused by remodeling on the user side without prior permission from the Company
  - Failure caused by servicing by unauthorized personnel by the Company
  - Failure due to force majeure including but not limited to, acts of God, fire, war, riot, rebellion and others
  - Failure due to shock or drop in or after transit
  - Failure due to operation in environment being out of ambient specifications.
  - A unit shipped to overseas.

## 8. MAINTENANCE

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

## 9. 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, model 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.

### For repair and other services, contact:

International Dept.  
 Noise Laboratory Co., Ltd.  
 1-4-4 Chiyoda, Chuo-ku, Sagami-hara, Kanagawa  
 252-0237, Japan  
 Tel: +81 (0)42-712-2051  
 Fax: +81 (0)42-712-2050

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## 10. APPLICATION FORM

We apply for buying INSTRUCTION MANUAL.

**Model: 06-00061A**

Applicant's address:

Company name:

Section:

Name of person in charge:

TEL:

FAX:

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

When an INSTRUCTION MANUAL is required, fill out the above Application Form and mail or fax it to NOISE LABORATORY CO., LTD. or our sales agent.