

INSTRUCTION MANUAL

COUPLING ADAPTOR
MODEL CA-805B

NOTICE

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Noise Laboratory Co., Ltd. shall have no liability for any trouble resulting from the misuse or improper handling of this product regardless of the contents of this booklet or arising from the repair or remodeling of this product by a third party other than Noise Laboratory Co., Ltd. or its authorized person.

Noise Laboratory Co., Ltd. shall have no liability for any trouble resulting from the remodeling or modification of this product.

In no event shall Noise Laboratory Co., Ltd. be liable for any results arising from the use of this product.

1. IMPORTANT SAFETY PRECAUTIONS

The following instructions are very important for safe handling of the Coupling Adapter CA-805B.

They must be kept strictly to prevent users of the Unit from receiving harm or damage through using the Unit. Read them carefully before use.

- **The instrument may not be used by people fitted with electronic medical devices such as pacemakers and such people may not enter the testing site while the instrument is operating**

Failure to follow this rule risks death or serious injury.

- **The instrument may only be used by trained EMC technicians (electrical technicians)**

There is a risk of death or serious injury, and of the emission of electromagnetic noise that exceeds the stipulated limits. Use the instrument in conjunction with appropriate measures for dealing with electromagnetic noise such as a Faraday cage or shielded room.

- **Do not use the instrument for any purposes other than the EMC testing purposes described in this instruction manual**

Failure to follow this rule risks death or serious injury.

- **The instrument may not be used in a location where fire is prohibited or there is a risk of explosion**

Failure to follow this rule risks igniting a fire due to an electrical discharge.

Before setting up the test site, connecting the equipment, or starting testing, please read the Chapter entitled "Basic Safety Precautions" which contains additional safety advice.

2. APPLICATION FORM FOR INSTRUCTION MANUAL

To: Noise Laboratory Co., Ltd.

We place an order for an instruction manual.

MODEL: CA-805B

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 your nearest sales agent of Noise Laboratory or Noise Laboratory.

Your sales agent;
To: NOISE LABORATORY CO., LTD.
1-4-4, CHIYODA, CHUO-KU, SAGAMIHARA CITY, KANAGAWA PREF
252-0237 JAPAN
Tel: +81-42-712-2051 Fax: +81-42-712-2050

The address, company name, individual's name, and other personal information (henceforth referred to as "personal information") entered in the application form will only be used for the purpose of sending the Instruction Manual and will not be shown or passed to any third party without a valid reason.
Noise Laboratory Co., Ltd. will manage customer's personal information in an appropriate manner.

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4. INTRODUCTION

Thank you very much for your purchase of this product.

The Coupling Adaptor CA-805B has been developed to inductively couple the high voltages pulses from the INS series simulators into cables under test without direction connection to the conductor of interest.

- This operation manual describes the function, operation and safety precautions for CA-805B.
- Thoroughly read this operation manual before use and keep it as a ready reference.

§ Features

Connected to the INS series Impulse Noise Simulator, Coupling adaptor Model CA-805B can couple noises generated by the simulator to the cable only by clamping it.

1. The user does not need to cut the cable to inject* noises to the signal, DC, AC or Ground line of the equipment under test.
*capacitive coupling
2. The user can perform a test for the immunity level of the each part, block, unit or component composing the equipment under test.
3. Direct noise injection into the signal line enabling effective checking of the level of noise immunity.
4. The cable to be tested of up to 26mm in diameter can be put through the CA-805B.

5. BASIC PRECAUTIONS FOR SAFETY IN USE OF THIS UNIT

5-1. Hazard symbols and its meaning



It expresses a **WARNING**.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



It expresses a **CAUTION**.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

5-2. Basic safety precautions



1. A person having a pace maker or other electronic medical device implanted into or connected to his or her body should not operate this unit and also should not enter the test area while this unit is operated.
【Precautions for human body, and operation.】
2. This unit cannot be used in a fire prohibited area or other explosive areas. If used in such an area, this unit is liable to cause combustion or ignition due to electric discharge etc.
【Precautions for human body, and environment.】
3. Our company and its distributors/agents shall have no liability for any injury or damage resulting from careless operation of this unit and any resultant damage or loss.
【Precautions for human body, operation, environment and connection.】
4. Mishandling or careless operation may result in serious injury.
【Precautions for human body, operation, environment and connection.】
5. For sure and safe operation, use accessories or options supplied from our company.
6. Any unnecessary cable shall not be connected. Wrong connections may cause damage to this unit.
【Precautions for human body, operation, and connection.】
7. Be extremely careful of an electric shock due to the generated pulses and power supply to EUT. (EUT : Equipment Under Test)
【Precautions for human body and connection.】
8. Before connecting this unit to a high voltage pulse generator, turn off the high voltage circuitry beforehand. Otherwise, the operator may receive an electric shock due to the generated high voltage pulses.
【Precautions for human body and connection.】
9. Fully insert the coaxial connector and turn it clockwise until a click is heard to make connection securely.
【Precautions for human body and connection.】

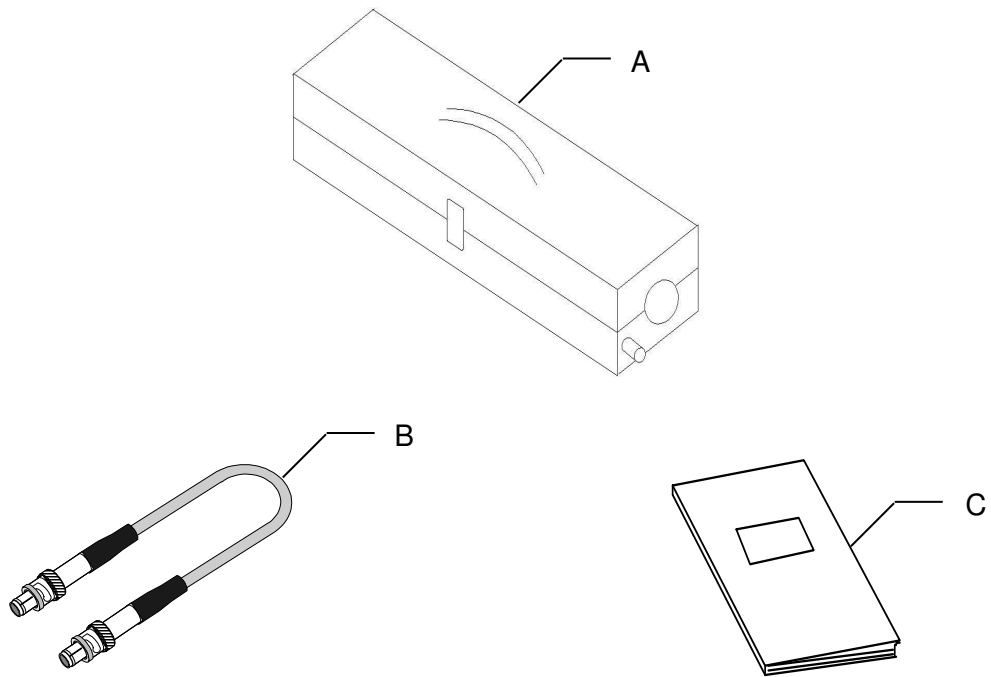
⚠ CAUTION 注意

10. During test, high level of electromagnetic radiation may be generated depending on the type or nature of the EUT and thus causing interference with nearby electronic equipment and radio communication equipment. In such case, the user may have to take measures such as a faraday cage, shielded room, shielded cable and so on.
【Precaution for environments】
11. If condensation is found, fully dry the unit before operating it, otherwise, the unit may be damaged or only exhibit limited performance.
【Precautions for environments】
12. Do not use nor keep the unit in a humid or dusty environment.
【Precaution for environments】
13. Do not drop the unit or do not give strong shock to the unit.
【Precaution for handling】
14. Do not wipe off the body and peripheral equipment with thinner, alcohol or other solvent. When the unit is dirty, soak a cloth in a detergent, wring it and wipe the unit with this cloth. Using solvents may spoil the appearance.
【Precautions for handling】
15. Only a service engineer authorized by our company should perform repair, maintenance work and internal adjustment.
【Precaution for handling and safety】
16. The output of the simulator (either INS) shall not be set to over 4000V. A higher voltage setting may cause damage to this unit.
【Precautions for human body, operation, and connection.】

6. SPECIFICATIONS

- Input voltage 4000V max.
- Input pulse width..... 50n~1000 ns
- Input impedance 50 Ω
- Diameter for clamping cable..... 26 mm (Max diameter)
- Storage temperature..... -5~55 °C
- Operating temperature 15~35 °C
- Operating humidity 25~75%RH (Not condensing)
- Dimensions..... 350 X 105 X 110 mm (Excluding projections)
- Weight Approx. 3kg

7. MAIN UNIT AND ACCESSORIES



	<u>Quantity</u>
A : CA-805B main unit	1
B : Coaxial cable (1.5m)	2
Connector type : NMHV (P) - NMHV (P) , Accessory cord : MODEL 02-00025A	
C : Instruction manual (this booklet)	1

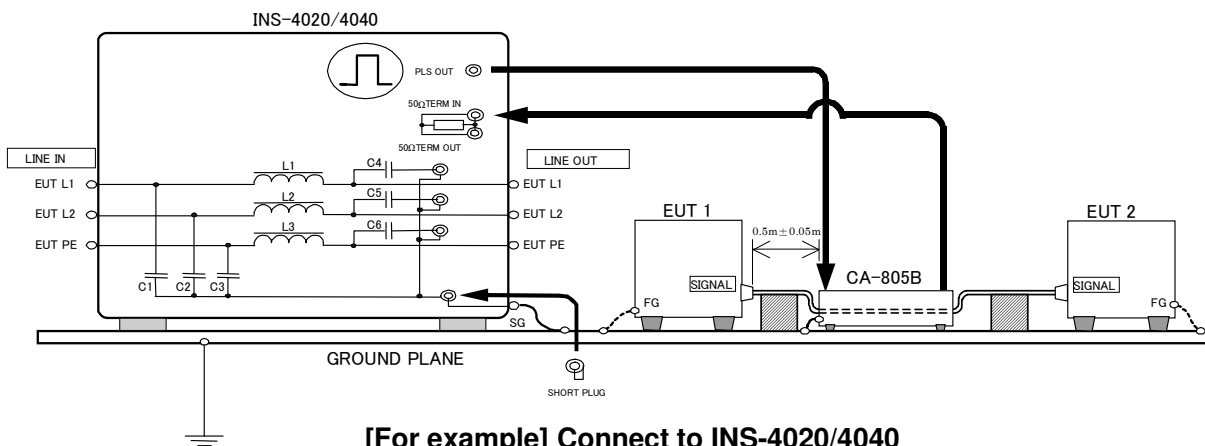
8. CONNECTIONS

8-1. Connections

It is recommendable that the EMC test with using this product should be conducted with test environment in accordance with the installation and operation condition of the EUT, such as a ground plane, a test table, an insulation pallet, and insulation blocks. The test environment to recommend and the main items of it are appeared below. The inside of [] is a accessory cord of Noiseken products.

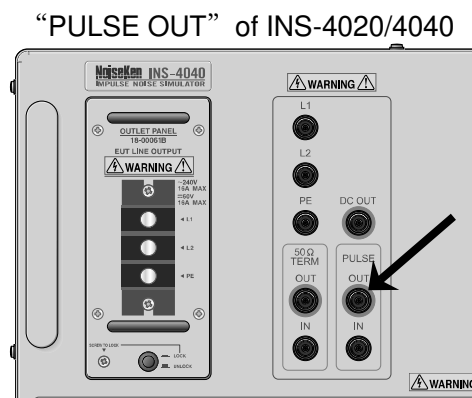
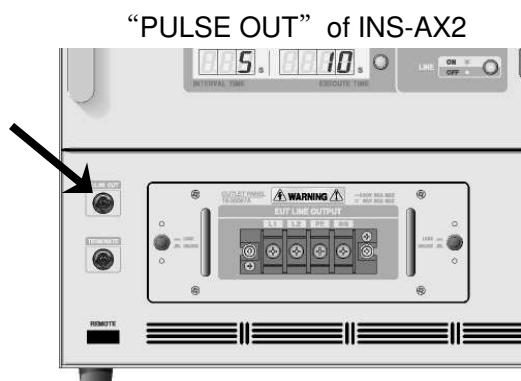
- Test table [03-00039A] : It is used when EUT is a desktop type.
- Ground plane [03-00007A] : When EUT is a desktop type, it covers on a test table. When EUT is a floor-top type, it covers on the floor of a test room.
- Insulation pallet [03-00024A] : It is used when EUT is a floor-top type.
- Ground cable : A braided wire which has more than AWG12 size ($\approx 3.5 \text{ mm}^2$) is recommended.
- Insulation block [03-00029A] : The signal cable of EUT should be floated from the ground plane.

For safe Capacitive coupling test, read carefully the instruction manual of your Impulse noise simulator as well as this instruction manual beforehand.



[For example] Connect to INS-4020/4040

- ① Connect the ground plane to the earth terminal of the test room with using an appropriate cable to ground it.
- ② Put the impulse noise tester, the CA-805B body, and EUT properly on the ground plane. In case EUT is floor-top type, put the insulation pallet first and put EUT on the insulation pallet.
- ③ Connect the Input connector of CA-805B main unit to the PULSE OUT connector of Impulse Noise Simulator (Models: INS series) with the attached coaxial cable.
The standard accessories are for the tests with INS-4300 series, INS-400L, INS-4001, INS-4020/4040, INS-AX series, and INS-AX2 series and so on, which have our original high-voltage coaxial connectors. When the CA-805B is used with INS-400 series simulators, the following optional coaxial cables are required.

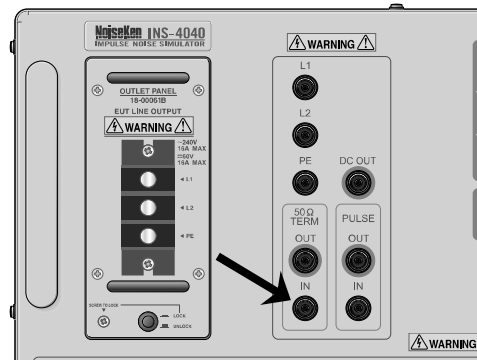


- ④ Connect the other connector of the main unit to the 50 Ω terminator input connector of the simulator with the other attached cable. Unless the terminator is connected, a proper test cannot be conducted. In case of INS-410, INS-420, and INS-4300, connect it to the separated terminator which was supplied as the accessory of the simulator.

Connect to “TERMINATE” (INS-AX2)



Connect to “50 Ω TERM IN” (INS-4020/4040)



CAUTION

Since the type of the coaxial connector is different, do not connect other types of cables (e.g. “pulse width setup cable” of INS-400 series) to this product. For details, refer to “8-2. Avoiding misuse of HV coaxial connector” .

- ⑤ Undo the buckle and put the cable to be tested through the CA-805B body. Care should be taken to position the cable with a minimum variation in distance to the surface of the internal conductor tube.* In case of a multi-line cable, be careful of twists. When the cable has been arranged adequately, close the CA-805B and fasten the buckle.
 ※The coupling factor is maximized when the cable to be tested touches the internal conductor tube of CA-805B. Suppose the coupling factor as 100% with this position, it is 83% at the center of the tube, 86% at the midpoint between the center and the inside surface, but the actual coupling factor defers from the theoretical value depending on the outside diameter of the cable, the thickness of covering material, the bending way, or any other factors.
- ⑥ Make all cables including the cable to be tested floated 10cm from a ground plane with putting them on the insulation blocks.
- ⑦ Connect the SG terminal of the CA-805B main part to the ground plane with appropriate wires. Whether each FG (frame ground) of EUT is connected to a ground plane or not should follow each product specification.
- ⑧ When connection is completed, turn on EUT, and inject pulses into the cable to be tested from the impulse noise simulator. Although the CA-805B does not have the structural direction, since test results may vary by replacing the pulse input terminal, test in both directions is recommendable.

In case of using this product with INS-400 series (e.g. INS-410, INS-420, etc.), the following optional cable is necessary instead of the coaxial cable of the accessory of this product.

MODEL 02-00003A 【MHV (P) ~NMHV (P) 1.5m】

MODEL 02-00007A 【NMHV (P) ~MHV (PJ) 0.2m】

Connect “PULSE OUT” of the INS-400 series simulator to the coaxial connector of the CA-805B with 02-00003A. Connect the other coaxial connector to the separated “terminator” of the accessory of the INS via “T-type branch connector”, which is also the accessory of the INS, with 02-00007A.

8-2. Avoiding misuse of HV coaxial connector



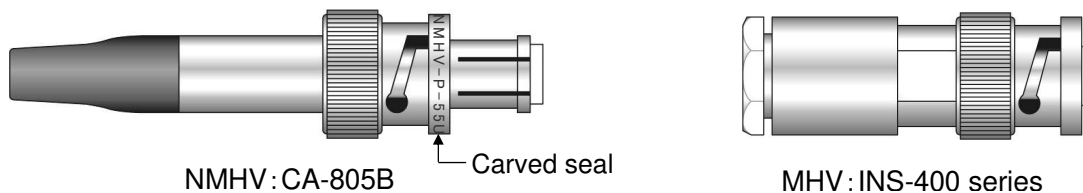
The high voltage coaxial connector “NMHV” which is used for this product is exclusively used for Noiseken’s products. When another connector which type and specifications are different is used even if its appearance looks like this connector, an electric shock or damage of this product might happen. Use the attached accessories and optional products produced by Noiseken so that the test can be conducted safely and securely.

Noise Laboratory has been renewing the type of coaxial connectors in accordance with making output pulse voltage of Impulse Noise Simulators higher.

The high voltage coaxial connector “NMHV” used for this product (CA-805B) is the exclusive –use connector for Noiseken’s products which was developed for using for impulse noise simulators which output pulse voltage exceeds 3kV. Some EMC test equipment manufactured other companies than us adopt coaxial connectors which are very similar to the NMHV connector, but if such a kind of other connector is connected to an NMHV connector mistakenly, an foreseen electric shock accident or malfunction of this product caused by an unexpected discharge on connection part might happen because sticking-out length of a center contact (a core line) and length of insulation body of such kinds of connectors are different from those of the NMHV connectors even though their appearance resembles closely.

To prevent such misuse as the above, the carved seal “NMHV-P-55U” which shows a pattern-type is put on the lock (rotor) part of the NMHV connector. If the similar type is mixed in, be sure to use Noiseken’s attached or optional products with confirming this carved seal. And, before developing the NMHV, Noise Laboratory adopted the coaxial connector of “MHV” for the INS-400 series (output pulse voltage 2kV type). The MHV connectors cannot be used with connecting to this product directly from the same reason as the above similar connectors’ case.

Distinguishing the MHV from the NMHV is easy because an appearance is greatly different in the MHV and the NMHV. In case of using this product with INS-400 series, be sure to connect them with using the conversion cable designated by Noise Laboratory.



9. 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.

1. Scope

The following terms shall apply only to products made by the Company.

2. 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.

3. Ownership of defective parts

Any defective part exchanged under the Company's servicing belongs to it.

4. Limited liability

In the event that damages resulting from servicing by the Company which 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.

5. 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

Limited warranty

Noise Laboratory Co., Ltd.(hereafter referred to as 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.

1. Scope

This warranty shall only apply to products made by the Company.

2. 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.

3. 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.

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 user 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 this unit.

11. NOISE LABORATORY SUPPORT NETWORK

- If a symptom which seems a trouble is found, check the symptom against the following check sheet and 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, pack the product and repair order sheet in the former package or equivalent suitable for transit and send them back.

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<http://www.noiseken.com>

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