⅏ TOA

IP INTERCOM C/O INTERFACE UNIT

N-8000CO

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Thank you for purchasing TOA's IP Intercom C/O interface unit.
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

TOA Corporation

1. SAFETY PRECAUTIONS

- Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.
- Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.
- After reading, keep this manual handy for future reference.

Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of the potential safety hazards.

⚠ **WARNING**

Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.

When Installing the Unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.
- Avoid installing or mounting the unit in unstable locations, such as on a rickety table or a slanted surface. Doing so may result in the unit falling down and causing personal injury and/or property damage.
- Install the unit only in a location that can structurally support the weight of the unit and the mounting bracket. Doing otherwise may result in the unit falling down and causing personal injury and/or property damage.

When the Unit is in Use

- Should the following irregularity be found during use, immediately disconnect the power supply plug from the AC outlet and contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
  - If you detect smoke or a strange smell coming from the unit
  - If water or any metallic object gets into the unit
  - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
  - If it is malfunctioning (no tone sounds.)
- To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to qualified service personnel.

- Do not insert nor drop metallic objects or flammable materials in the ventilation slots of the unit's cover, as this may result in fire or electric shock.
- Do not touch a plug during thunder and lightning, as this may result in electric shock.

⚠ **CAUTION**

Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- Be sure to follow the instructions below when rack-mounting the unit. Failure to do so may cause a fire or personal injury.
  - Install the equipment rack on a stable, hard floor. Fix it with anchor bolts or take other arrangements to prevent it from falling down.
  - When connecting the unit's power cord to an AC outlet, use the AC outlet with current capacity allowable to the unit.
  - The supplied rack-mounting screws can be used for the TOA equipment rack only. Do not use them for other racks.

When the Unit is in Use

- Do not place heavy objects on the unit as this may cause it to fall or break which may result in personal injury and/or property damage. In addition, the object itself may fall off and cause injury and/or damage.
- Do not stand or sit on, nor hang down from the unit as this may cause it to fall down or drop, resulting in personal injury and/or property damage.

[Notification for North America]

FCC REQUIREMENTS

General Requirements For All Equipment:

1. This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the top cover of this equipment is a label that contains, among other information, a product identifier in the format US: AAAEQ##TXXXX.
   If requested, this number must be provided to the telephone company.

2. USOC Jack RJ11C or RJ11W.

3. A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA.
   A compliant telephone cord and modular plug is provided with this product.
   It is designed to be connected to a compatible modular jack that is also compliant.
   See installation instructions for details.

4. The REN is used to determine the number of devices that may be connected to a telephone line.
   Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call.
   In most but not all areas, the sum of RENs should not exceed five (5.0).
   To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.
   For products approved after July 23, 2001, the REN for this product is part of the product identifier that has the format US: AAAEQ##TXXXX.
   The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3).
   For earlier products, the REN is separately shown on the label.

5. If this equipment [N8KCOCU] causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

6. The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment.
   If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

7. If trouble is experienced with this equipment [N8KCOCU], for repair or warranty information, please contact TOA Electronics, Inc.,1350 Bayshore Highway, Suite 270 Burlingame, California 94010, phone (650) 452-1200.
   If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved.

8. If there is a section in the general customer instructions that provides detailed information on repairs, a reference to that section is acceptable.
   If this equipment is of a type that is not intended to be repaired, state that fact in place of any repair instructions.

9. Connection to party line service is subject to state tariffs.
   Contact the state public utility commission, public service commission or corporation commission for information.

10. If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this [N8KCOCU] does not disable your alarm equipment.
    If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

11. Customer Information 4 July 2003
    This equipment is hearing aid compatible.

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12. CAUTION - To reduce the risk of fire, use only No.26 AWG or larger telecommunication line cord.

13. The interconnected telecommunication terminal equipment should be UL Listed and the connections shall be made in accordance with Article 800 of the NEC.

Data Equipment:

For permissive, programmable and (or) fixed loss loop operation data equipment, in addition to the general requirements for all equipment, information must be provided explaining which jack is associated with each operation.
– Permissive, use RJ11C
– Programmable, use RJ41S and RJ45S
– Fixed Loss Loop, use RJ41S
– Refer to ATIS Technical Report No. 5 for details on these connectors.
For Private (Leased) Line (Analog Data Format) equipment, the type JM8 jack is required. Refer to ATIS Technical Report No. 5 for details on this connector.
For Private (Leased) Line (Digital Format) equipment, in addition to the general requirements for all equipment, certain digital connections require that an encoded analog content and billing protection affidavit be provided the telephone company. Customer instructions must contain information on the preparation and submission of the affidavit.

Systems:

The consumer instructions for systems must contain information on all connectors to the network (switched and private line). This information includes the jack USOCs, FICs, SOCs, the REN if applicable, the premises wiring information, and any affidavits or written authority authorizations. Furthermore, the US: AAAEQ##TXXX number of the system must be provided so the telephone service provider can ascertain intended modes of operation and verification of certification ports.

Adjuncts - KX and PX Devices:

The consumer information must contain notification that when the adjunct is used with a leased system, permission of the owner of the equipment must be obtained for connection of the adjunct because modification of the host system is often required.
Customer instructions for KX type telephones with medium impedance analog message waiting lights and/or line status indicators must contain statements that they can only be connected to host equipment and never directly to the network. The reason is that they do not meet the 5 megohm requirement and most likely will create excessive leakage current when polled by the telephone company's daily automatic loop insulation test equipment. Such events trigger a maintenance action by the telephone company to determine the location of such leakage currents.

WARNING (For U.S.A. only)

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause interference to radio communications.
It has been tested and found to comply with the limits for a Class A computing device pursuant to Subject J of Part 15 of the FCC Rules, which are designed to provide reasonable protection such interference when operated in a commercial environment.
Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

INDUSTRIAL CANADA REQUIREMENTS

EQUIPMENT ATTACHMENT LIMITATIONS

NOTICE: The Industry Canada label identifies certified equipment.
This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements documents.
The Department does not guarantee the equipment will operate to the user's satisfaction.

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Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company.
The equipment must also be installed using an acceptable method of connection.
The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repair to certified equipment should be coordinated by a representative designated by the supplier. Any repair or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

The Ringer Equivalence Number (0.4) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface.
The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

The interconnected telecommunication terminal equipment should be UL Listed and the connections shall be made in accordance with Article 800 of the NEC.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.
To reduce the risk of fire, use only No.26 AWG or larger telecommunication line cord.

[Notification for Europe]

NOTICE: The interconnected telecommunication terminal equipment should comply with IEC60950-1.
Caution: Do not defeat the Class I product's earthed connections.

2. GENERAL DESCRIPTION

TOA's N-8000CO is C/O interface unit used for the N-8000 Series Packet Intercom System (IP network compatible intercom) employing packet audio technology*[1] .
IT has an analog central office line circuit, allowing the intercom station to make and receive calls to and from the telephone line.
Connecting the unit to the LAN permits paging calls through analog subscriber line to be made and the equipment connected to the N-8000MI and N-8000DI to be controlled.

*[1] Technology related to audio transmission over a network.

Warning
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

3. FEATURES

• Exchanges, IP stations and various kinds of interface units can be distributed over a data communications network.
• Can be connected to an existing local area network (LAN) or wide-area network (WAN).
• The dedicated software program enables centralized control with a personal computer.
• System maintenance (verifying operation log and Line supervision) can also be performed with a personal computer and Internet browser.

4. NOMENCLATURE AND FUNCTIONS

[Front]

[Rear]
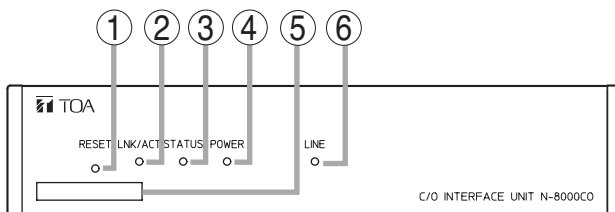
1. Reset key [RESET]
Pressing this key reactivates this unit.

2. LNK/ACT indicator [LNK/ACT] (Green)
Lights when connected to a network, and flashes while transmitting or receiving data.

3. Status indicator [STATUS] (Red)
Continuously lights while data is written to an internal storage medium (FlashMemory).
Flashes if there is a failure.

4. Power indicator [POWER] (Green)
Lights when power is supplied to the unit.

5. MAC address
This is the address*[2] used by the unit. Since the relationship of each exchange location to its MAC address is established when setting the network attributes, keep track of this relationship for later use.

*[2] The inherent address assigned to each network component, expressed in 12-digit hexadecimal notation.

6. Subscriber line indicator [LINE] (Green)
Remains lit while accessing the subscriber line.
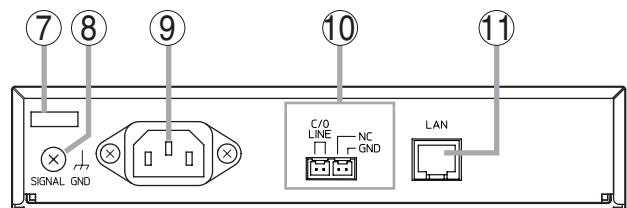
7. Cord clamp
Pass the power cord through this clamp to ensure that the plug does not pull out when the unit is mounted to a wall. (Refer to p. 9.)

8. Functional earth terminal [SIGNAL GND]
Ground this terminal.
Note: This terminal is not for protective earth.

9. AC inlet
Connect the supplied power cord.
Note
If there is a danger of lightning strikes, insert an appropriate surge arrester into the power line.

10. Subscriber Line Connection Terminal [C/O LINE]
Connect the subscriber line to this terminal using a pair of twisted pair cables. Use the mini-clamp connector for connection of this terminal.

11. Network connection terminal [10/100M]
Connects to a 10BASE-T- or 100BASE-TX-compatible network. (Ethernet RJ-45 jack)

5. INSTALLATION

The N-8000CO can be installed in any of three ways: (1) equipment rack mounting, (2) wall mounting, and (3) desk-top installation.

5.1. Equipment Rack Mounting

A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."

The N-8000CO can be mounted on the CR -273 or CR -413 or standard EIA 19" Equipment rack.
For the CR -273 and CR -413 Equipment rack assembly, read the installation manual supplied with the rack.

Note
When installing the N-8000CO, lay the equipment rack down face-up to do installation work safely.
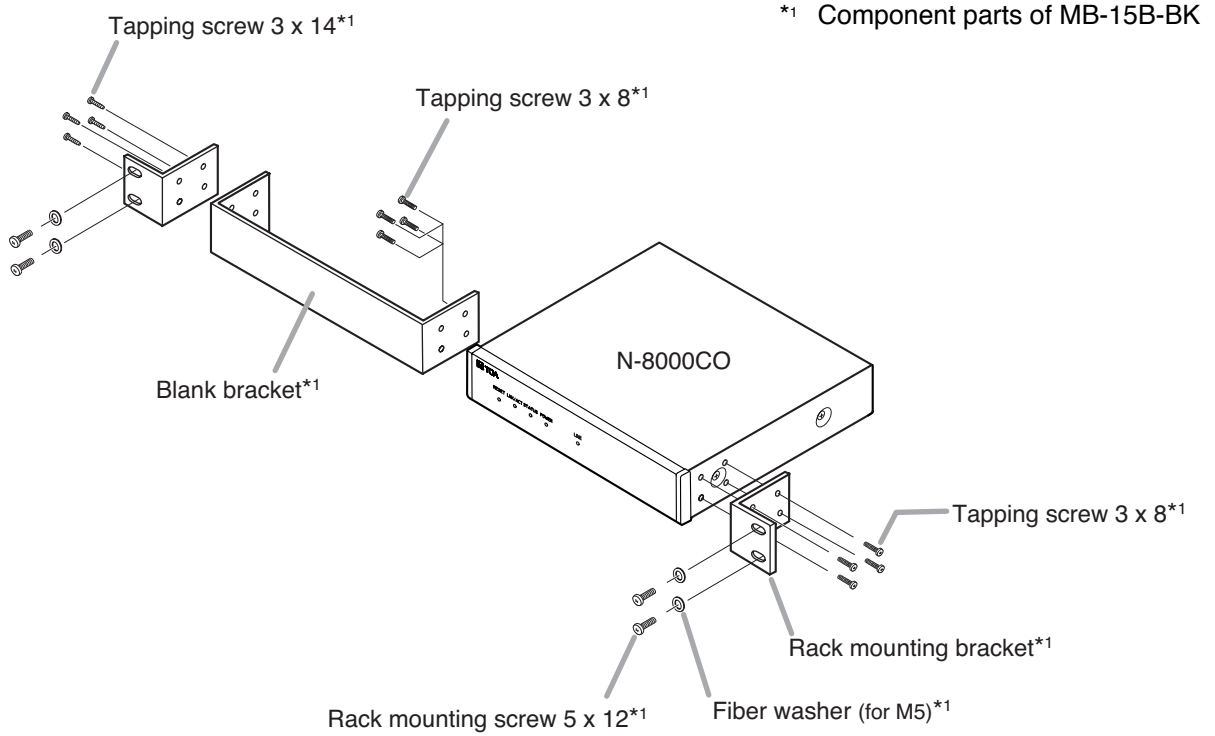
5.1.1. Setting space

For maintenance works, allow much space between the wall and Equipment rack.
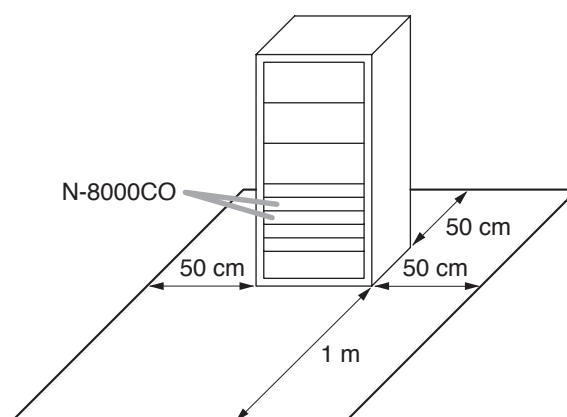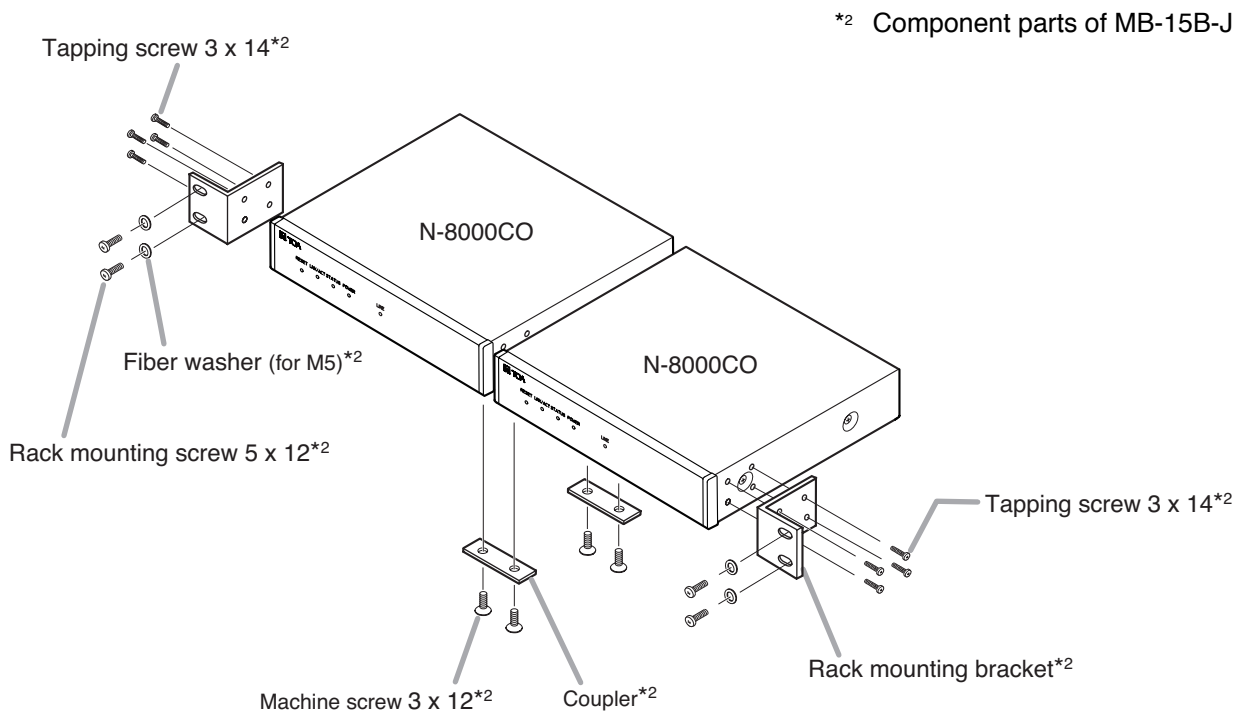
5.1.2. Mounting on the rack

Use the optional mounting hardware set when installing the unit in an equipment rack.

· **Use the optional MB-15B-BK hardware set when mounting a single unit.**

Tapping screw 3 x 14[*1]

Tapping screw 3 x 8[*1]

[*1] Component parts of MB-15B-BK

N-8000CO

Blank bracket[*1]

Tapping screw 3 x 8[*1]

Rack mounting bracket[*1]

Rack mounting screw 5 x 12[*1]

Fiber washer (for M5)[*1]

· **Use the optional MB-15B-J hardware set when mounting 2 units.**

[*2] Component parts of MB-15B-J

Tapping screw 3 x 14[*2]

N-8000CO

N-8000CO

Fiber washer (for M5)[*2]

Rack mounting screw 5 x 12[*2]

Tapping screw 3 x 14[*2]

Machine screw 3 x 12[*2]

Coupler[*2]

Rack mounting bracket[*2]

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5.2. Desk-Top Installation

When installing the N-8000CO on a desk, secure the supplied plastic feet to the unit's bottom using the supplied machine screws.

Machine screw M3 x 8 (accessory)

Plastic foot (accessory)
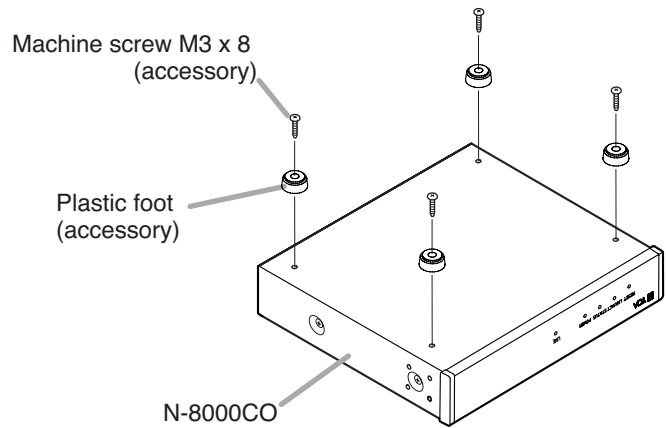
N-8000CO

5.3. Wall Mounting

Step 1. The N-8000CO can be mounted on a wall using an optional YC-850 Wall-mounting bracket .
Install the YC-850 to the N-8000CO.

Wall mounting bracket (YC-850)

Machine screw M3 x 6 (supplied with the YC-850)
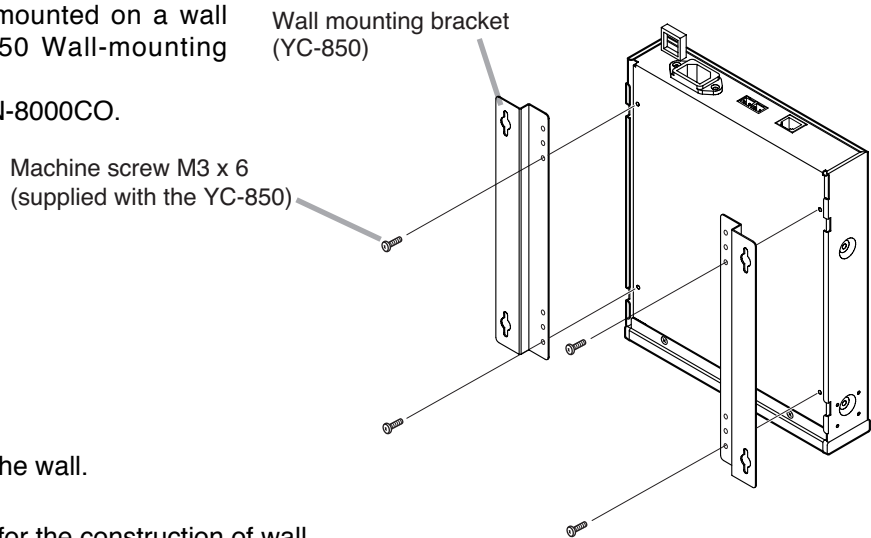
Step 2. Mount the N-8000CO on the wall.

Notes
 • Use appropriate screws for the construction of wall.
 • Wood screws 3.5 x 20 are supplied with the YC-850.
 • The socket-outlet shall be installed near the equipment and the plug (disconnecting device) shall be easily accessible.

Protect against disconnection (Power supply plug)

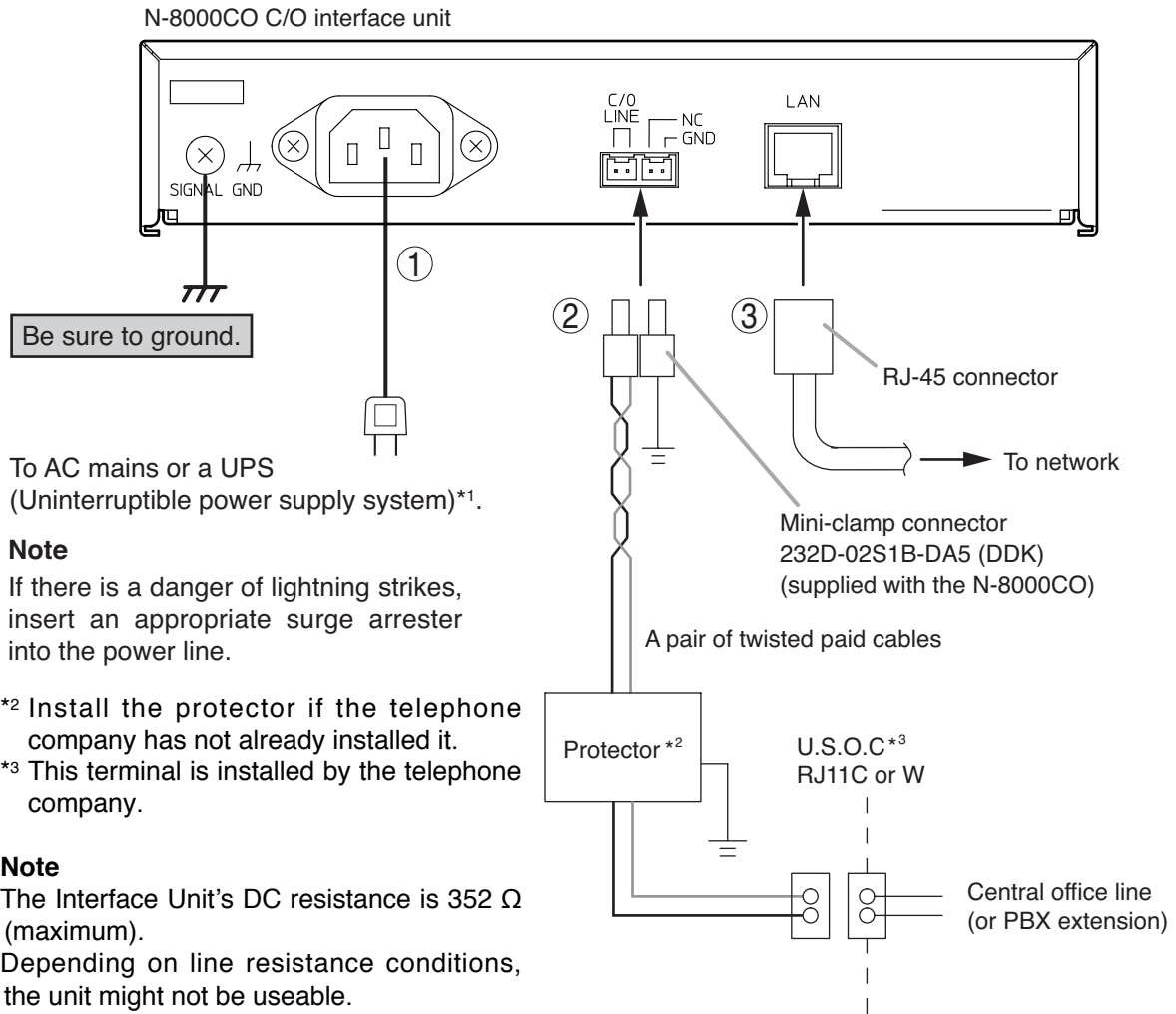Unlock cord clamp and run the power supply cord through it.

Note
Keep the cable length between a power supply plug and cord clamp as short as possible.

Power supply cord

Cord clamp

Wall surface

Wood screw 3.5 x 20 (supplied with the YC-850)
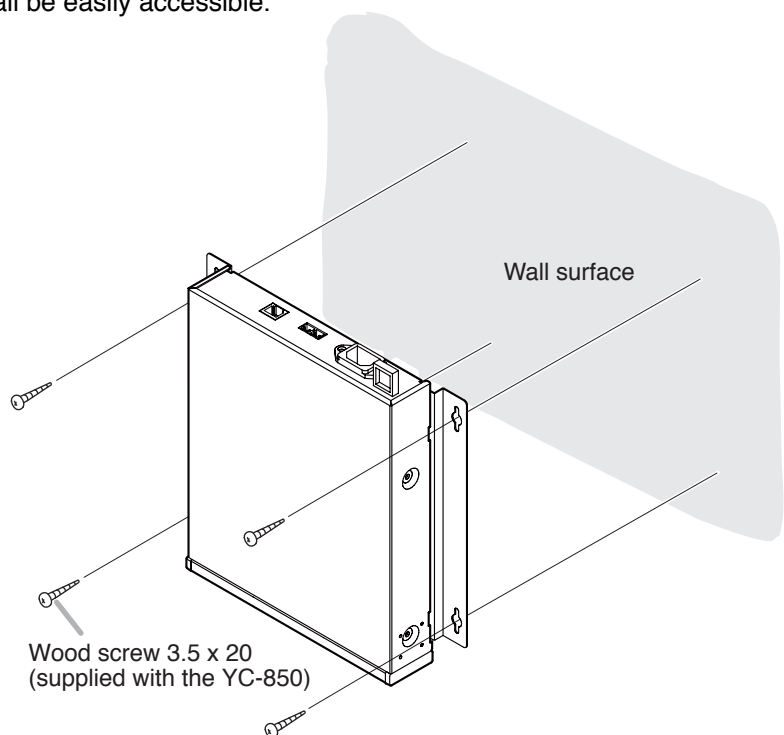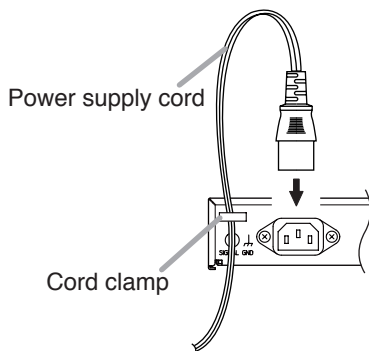
6. WIRING

6.1. Connection Diagram

N-8000CO C/O interface unit

Be sure to ground.

To AC mains or a UPS
(Uninterruptible power supply system)*[1].

Note

If there is a danger of lightning strikes, insert an appropriate surge arrester into the power line.

*[2] Install the protector if the telephone company has not already installed it.
*[3] This terminal is installed by the telephone company.

Note

The Interface Unit's DC resistance is 352 Ω (maximum).
Depending on line resistance conditions, the unit might not be useable.

RJ-45 connector

To network

Mini-clamp connector
232D-02S1B-DA5 (DDK)
(supplied with the N-8000CO)

A pair of twisted paid cables

Protector *[2]

U.S.O.C *[3]
RJ11C or W

Central office line
(or PBX extension)

[General description of connection]
For cables, refer to p. 11.

1. Power supply connection
Connect the supplied power supply cord to AC Mains or a UPS (Uninterruptible power supply).

About power supply cord handling
The supplied power supply cord is designed for exclusive use with the N-8000CO.
Use the supplied power supply cord only with the N-8000CO.

2. C/O line connection
Connect the C/O line to the PSTN (public switched telephone network) using the supplied mini-clamp connector.
(Refer to p. 11, Connector connection.)

> ⚠ **CAUTION**
>
> To reduce the rick of fire, use only No.26 AWG or larger telecommunication line cord.

3. Network connection
Can be connected to a network of 10BASE-T/100BASE-TX in auto-sensing.
Use a straight through cable of UTP category 5 or more for this connection.

*[1] Select an appropriate UPS taking into consideration the total power consumption of all system components and the required backup time, and also the requirement that the UPS should employ the on-line power system.

Reference
C/O interface unit: 6 W (rated) for CE version, 6 W (rated) for CU version
8-Port 10M/100M Switching Hub: 10 W (Differs depending on products.)

6.2. Type of Cable

The types of cables are to be determined according to the following conditions.

- UTP category 5 Straight through cables with RJ45 connector are to be used for connecting to IP network.
- The number of cables pairs laid should be determined considering the possibility of future expansion of the system.
- Outdoor wires should be used where wiring passes through inaccessible areas such as ceilings or under floors where the maintenance is not performed. Indoor wires may also be used, however, in case where there is no risk of deterioration due to exposure to heat, etc.

Note
Specifications related to junction are as follows.

Mini-clamp connector (N-8000CO C/O line connection terminal)
        Conductor diameter: ø 0.4 – 0.65 mm (AWG22 – 26), Solid wire
   Outside diameter: ø 1.05 mm or below

6.3. Connector Connection

Connect the mini-clamp connector supplied with the N-8000CO, to a cable using a commercially available tool (pliers).

Step 1. Cut off two-cable ends in equal length, and insert them securely to a cover section (transparent side) of the mini-clamp connector.
   **Note**
      Insert the cable without stripping the cable jacket.
      For cables, refer to above, "Type of Cable."

Cover (transparent side)

Cable

Mini-clamp connector (accessory, model 232D-02S1B-DA5 manufactured by DDK Ltd.)
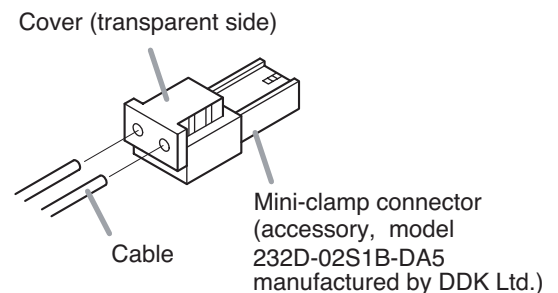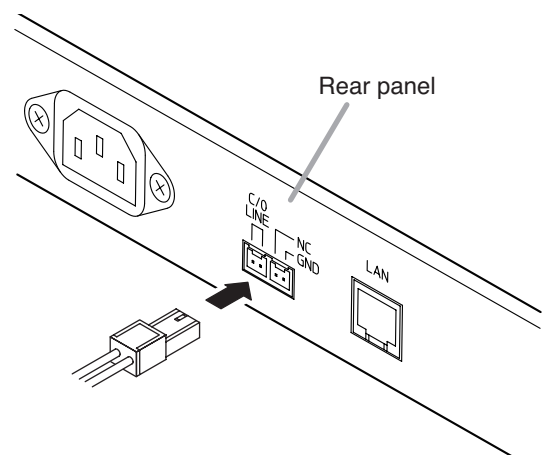
Step 2. With a pair of pliers, lightly pinch the mini-clamp cover and, after ensuring that the cable is securely inserted, firmly squeeze on the cover.
      Note
      Squeeze on the mini-clamp cover until it is correctly locked.
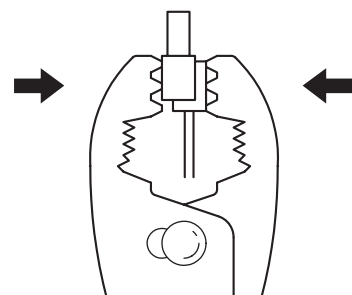
Step 3. Insert the wired connector (plug) into the C/O interface unit's connector (socket) until it locks into place.

Rear panel

C/O LINE

NC GND

LAN

7. ACCESSORIES

AC power cord (2 m) 1   Plastic foot 4
CD* (for PC setting, maintenance use) 1   Machine screw M3 x 8 4
Mini-clamp connector (2P) 2

* Contains the N-8000 setting software program and the N-8000 series instruction manual. The Setup Launcher is automatically started when the supplied CD-ROM is inserted into the PC's drive.
   Note
   If your PC's CD drive is not compatible with the AutoRun function, the setup guide is not automatically started even when the CD is inserted. Use either "Explorer" or "My Computer" to execute the following files, or use [Start → Run] in the Task Bar and enter the following command.
   <Drive where CD is placed> \index.html
   For example, when placing the CD in the "d" drive, → d:\index.html

8. OPTIONAL PRODUCTS

Rack mounting bracket: MB-15B-BK (for rack mounting one N-8000CO unit)
                             MB-15B-J (for rack mounting two N-8000CO units)
Wall mounting bracket: YC-850

Version update information

- Download our TOA Products Data, web site (http://www.toa-products.com/international/) to get the up-to-date version for N-8000 software, firmware, and Instruction manuals.
- The software version number can be confirmed using the Help menu.
- The current firmware version can be confirmed on the system management screen displayed when the browser establishes the connection to the C/O interface unit.
- The instruction manual version number can be confirmed by checking the preparation date (month and year) shown at the lower right corner of the last page.
   Example: Prepared in January 2010: 201001

Traceability Information for Europe (EMC directive 2004/108/EC)

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