

# Operation Manual

## Network Power Amplifier **NPA Series**



**interM**

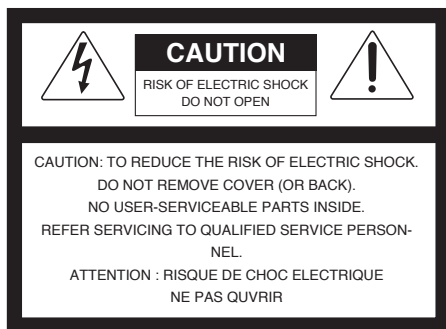
# Welcome

## A personal welcome to you from the management and employees of Inter-M

All of the co-workers here at Inter-M are dedicated to providing excellent products with inherently good value, and we are delighted you have purchased one of our products.

We sincerely trust this product will provide years of satisfactory service, but if anything is not to your complete satisfaction, we will endeavor to make things right.

Welcome to Inter-M, and thank you for becoming part of our worldwide extended family!



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operation and maintenance (servicing) instructions in the literature accompanying the appliance.

Caution: To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

## WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

Attentions: Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans en laisser aucune partie à découvert.  
Pour déconnecter complètement l'appareil du réseau d'alimentation, déconnecter le cordon d'alimentation de la prise murale.  
La prise du réseau d'alimentation doit demeurer aisément accessible.

\*WARNING FOR YOUR PROTECTION PLEASE READ THE FOLLOWING-WATER AND MOISTURE: Unit should not be used near water(e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

\*Do not install this equipment in a confined space such as a book case or similar unit.

\*Warning : To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture and objects filled with liquids, such as vases, should not be placed on this apparatus.

\*This apparatus shall be connected to a mains socket outlet with a protective earthing connection.

\*To completely disconnect this apparatus from the AC mains, disconnect the power supply cord plug from the AC receptacle.

\*The mains plug of the power supply cord shall remain readily accessible.

## CAUTION

\*These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

## NOTE

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

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## Unpacking

Although your NPA Series is neither complicated nor difficult to operate, we recommend you take a few minutes to read this brief manual and familiarize yourself with the important information regarding product features, setup and operation.

As with most electronic devices, we strongly recommend you retain the original packaging. In the unlikely event the product must be returned for servicing, the original packaging (or reasonable equivalent) is required.

## Installation

### Environment

Never place this product in an environment which could alter its performance or reduce its service life. Such environments usually include high levels of heat, dust, moisture, and vibration.

## IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



## Features

- **Class-D amplifier, using SMPS power**

There is a built-in protection circuit against amplifier overheating, output short circuit, overload, DC output, and power failure.

- **Support power supply for emergency broadcasting (DC 24V)**

In case of power outage, it is operated by battery for emergency broadcasting (DC 24V).

- **Integrated with Main controller**

The system can be configured in conjunction with the main controller.

- **Provides various outputs and channels depending on the installation environment**

240W: NPA-240S (1CH), NPA-240D (2CH), NPA-240Q (4CH)

480W: NPA-480S (1CH), NPA-480D (2CH)

- **Supports various contact input/output**

It supports various contact input/output for scenario broadcasting.

- **Status display LED / input signal level meter**

the user can check the operation status or failure of the product in real time.

- **Supports Line Check and Earth Fault functions for amplifier/speaker protection**

The reliability of the product is increased by periodically checking the condition of the speaker line.

## Contents and Accessories

1. AC power cord x 1EA

2. Speaker output terminal block (different for each product)

- NPA-240S, NPA-480S: 4P Terminal Block x 1EA

- NPA-240D, NPA-480D: 4P terminal block x 2EA

- NPA-240Q: 4P terminal block x 4EA

3. 2P terminal block x 1EA

4. 8P terminal block x 2EA

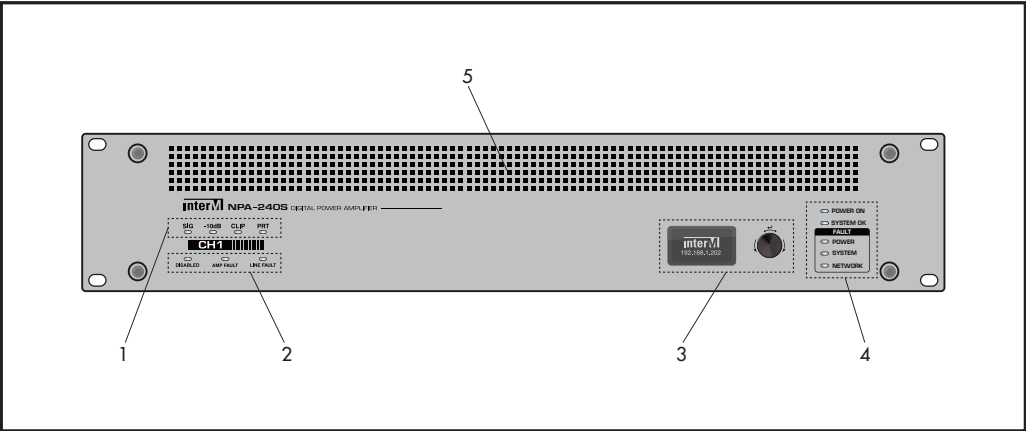
5. 3P terminal block x 4EA

6. Screws for rack mounting x 4EA

7. Washer x 4EA

8. User Manual x 1EA.

# Front Panel



1. Input level meter & protection circuit operation LED  
LED that displays the level of the audio signal input to device.

| Indicator LED |          | Description and operating conditions   |
|---------------|----------|----------------------------------------|
| Type          | LED      |                                        |
| SIG           | ● GREEN  | Audio Input Signal > -30dBV            |
| -10dB         | ● GREEN  | Audio Input Signal > -10dBV            |
| CLIP          | ● YELLOW | Audio Input Signal > 6dBV              |
| PRT           | ● RED    | Amplifier Protection Circuit Operation |

※ If CLIP LED flashes, please adjust input level on the webpage. If PRT LED flashes, please check device and connection of speaker lines.

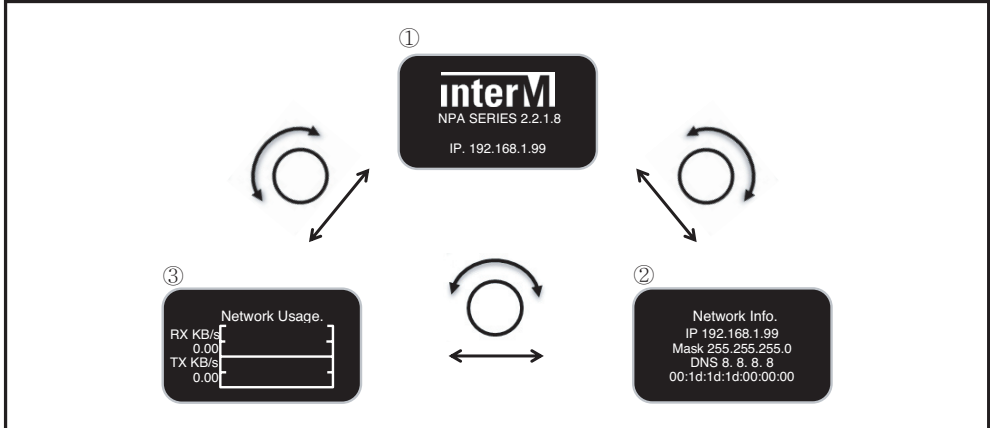
2. AMP STATUS INDICATOR LED  
LED that displays the status of amplifier operation.

※DISABLE: Amp use is selectable on the webpage of IPA-100.

| Indicator LED |          | Description and operating conditions |
|---------------|----------|--------------------------------------|
| Type          | LED      |                                      |
| DISABLE       | ● YELLOW | Unused Amplifier                     |
| AMP FAULT     | ● YELLOW | Amplifier Problem                    |
| LINE FAULT    | ● YELLOW | Speaker, Line Problem                |

### 3. OLED DISPLAY & CONTROL KNOB

It is a screen that displays device information such as IP address and MAC ADDRESS. User can switch screens by turning the knob.



- ① It is the standby screen of the device. The model name and network information are displayed. Network Primary Information Display
- ② In the standby screen, turn the control switch on the front panel to the right to display network-related details (IP Address, Subnet mask, DNS Server, Mac Address). On the network-related detailed information screen, if the user turn the front display control switch to the left, the standby screen (model name, network information) is displayed.
- ③ If the user turn the display window control switch to the right on the network-related detailed information screen, the network status (RX/TX data rate) is displayed. Turning the display window control switch to the left on the network status display screen displays network-related details (IP Address, Subnet mask, DNS Server, Mac Address).

※ Screen goes off if operation is not occurred for a while.

### 4. DEVICE STATUS INDICATOR LED

LED that displays the operation and broken status of device.

※ If the NETWORK LED is on, check the UTP cable is connected or IPA-100 is on.

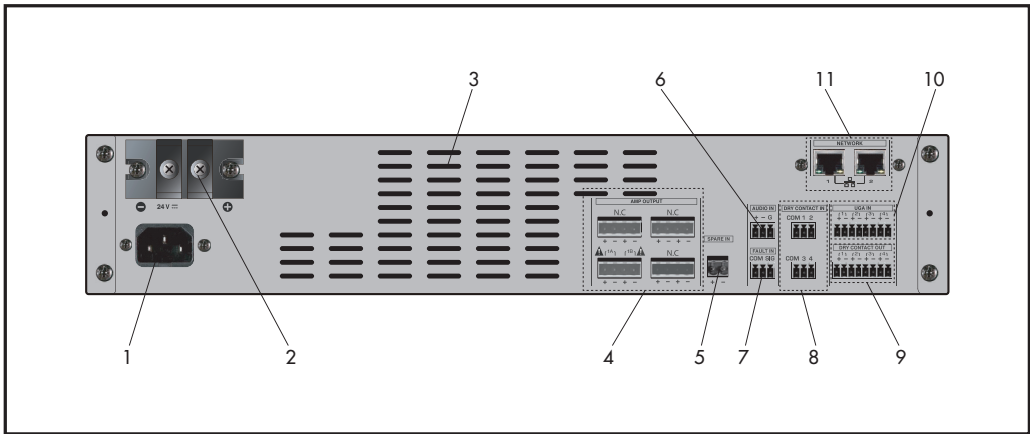
| Indicator LED |          | Description and operating conditions |
|---------------|----------|--------------------------------------|
| Type          | LED      |                                      |
| POWER ON      | ● GREEN  | Power Normal Operation               |
| SYSTEM OK     | ● GREEN  | System Normal Operation              |
| POWER         | ● YELLOW | Power Problem                        |
| SYSTEM        | ● YELLOW | System Problem                       |
| NETWORK       | ● YELLOW | Network Problem                      |

### 5. AIR VENTS

It is an air circulation passage to prevent overheating of the device.

※ Be careful not to block the vents.

## Rear Panel



### 1. AC INPUT TERMINAL

This is an AC power supply terminal.

※ Please check AC voltage before connection.

### 2. DC INPUT TERMINAL

Emergency DC back up power (DC 24V) terminal. When AC power is cut off, The unit will operate with DC power from spare battery pack.

※ Please confirm power and polarity before connection.

### 3. AIR VENTS

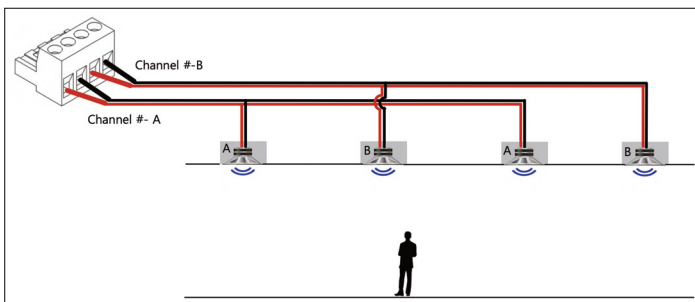
It is an air circulation passage to prevent overheating of the device.

※ Be careful not to block the vents.

### 4. SPEAKER OUTPUT TERMINAL

Each channel provides two speaker output terminals (A, B). With a built-in speaker line checker, if an error occurs in the speaker line, the broadcast is output to the normal speaker terminal.

- Speaker connection



It is possible to connect all speakers to one channel, but it can also be applied to places where redundancy of speaker lines is required as above.

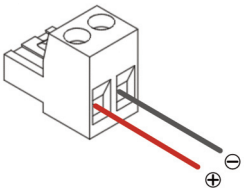
● Speaker output channel and impedance

| Output | Item     | Output channel | impedance   |
|--------|----------|----------------|-------------|
| 240W   | NPA-240S | 1              | 100V/41.66Ω |
|        | NPA-240D | 2              |             |
|        | NPA-240Q | 4              |             |
| 480W   | NPA-480S | 1              | 100V/20.83Ω |
|        | NPA-480D | 2              |             |

- ※ Total impedance of speakers should not be lower than rating impedance.  
(Total impedance of speakers is all connected speaker impedance of channel A and B).
- ※ N.C terminal is not output terminal for audio. (Depending upon model)

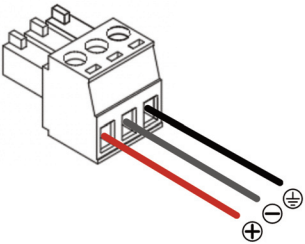
### 5. SPARE IN TERMINAL

It is a replacement terminal in case that current amp is defected.  
On the main controller web page, the user can set the audio input to the corresponding terminal to be output to the desired speaker channel.



### 6. AUDIO IN TERMINAL

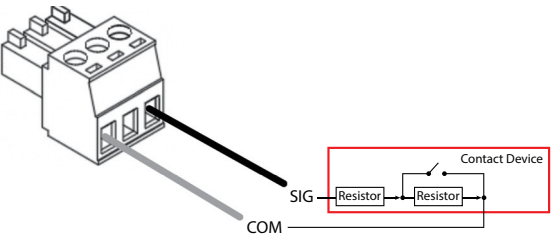
It is a balanced input terminal as an audio input terminal. In the main controller web page, the user can set the AUDIO IN input to output to the desired speaker channel.



### 7. FAULT IN CONTACT TERMINAL

It is a contact terminal that indicates fault of externally connected devices. When the resistance value of the contact device connected to the COM terminal and SIG terminal is read and reaches a specific resistance value, a FAULT event occurs. The FAULT event is sent to the Main controller to execute the set scenario action.

● Terminal Connection



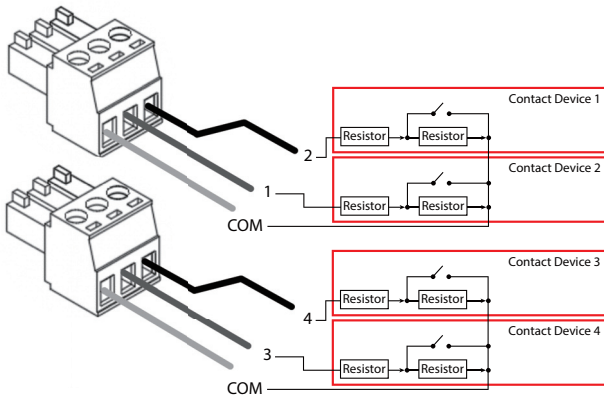
- Operation status by resistance

| Resistance    | Operation        |
|---------------|------------------|
| 20k $\Omega$  | Stand by         |
| Open or Short | Connection fault |

## 8. DRY CONTACT IN TERMINAL

It is a contact input terminal. Four channels can be used, and as shown in the figure below, an event occurs when the resistance value of the contact device connected between the COM terminal and each channel is read and reaches a specific resistance value. When a contact point event occurs, it is transmitted to the main controller and the set scenario action is executed.

- Terminal connection



- Operation status by resistance

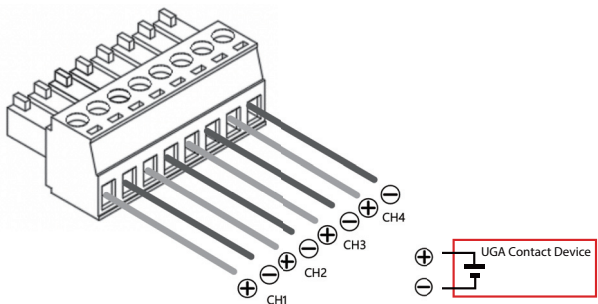
| Mode          | Resistance                                | Operation        |
|---------------|-------------------------------------------|------------------|
| 10k $\Omega$  | 10k $\Omega$                              | Contact event    |
|               | 20 k $\Omega$ (10 k $\Omega$ in series)   | Stand by         |
|               | Open or Short                             | Connection fault |
| 4.7k $\Omega$ | 4.7k $\Omega$                             | Contact event    |
|               | 9.4 k $\Omega$ (4.7 k $\Omega$ in series) | Stand by         |
|               | Open or Short                             | Connection fault |

- ※ Resistance value change can be set on the main controller web page. For detailed operation and setting method, refer to the web page manual.
- ※ When connecting contact device, use only 4.7k $\Omega$ , 10k $\Omega$  (5% or less) resistance.

# 9. UGA IN TERMINAL (WET CONTACT)

Terminal to connect UGA alarm contact device. The following events occur in the main controller according to the DC voltage range input to each channel.

- Terminal connection



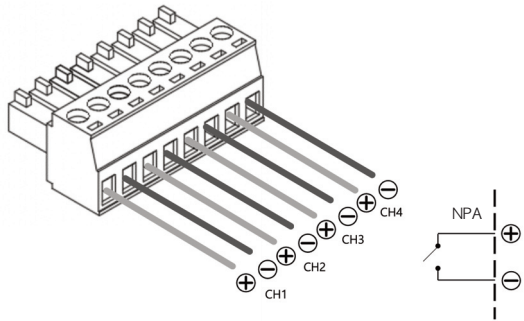
- Operation status by DC

| Input DC              | Operation        | recommended voltage |
|-----------------------|------------------|---------------------|
| $-2V < UGA\ IN < 2V$  | Connection fault | 0V                  |
| $2V < UGA\ IN < 22V$  | Stand by         | 12V                 |
| $22V < UGA\ IN < 60V$ | Event occurs     | 25V                 |

- ※ Before connecting the contacts, be sure to check the polarity and be careful not to exceed the maximum of 60V.
- ※ Since there is an error between voltage ranges, please use the recommended voltage.
- ※ For detailed operation and setting method, refer to the web page manual.

# 10. DRY CONTACT OUT TERMINAL

It is a general contact output terminal. Both ends keep the usual short state. If the contact output of each channel is operated in the main controller web page, both ends are opened as shown in the figure below.

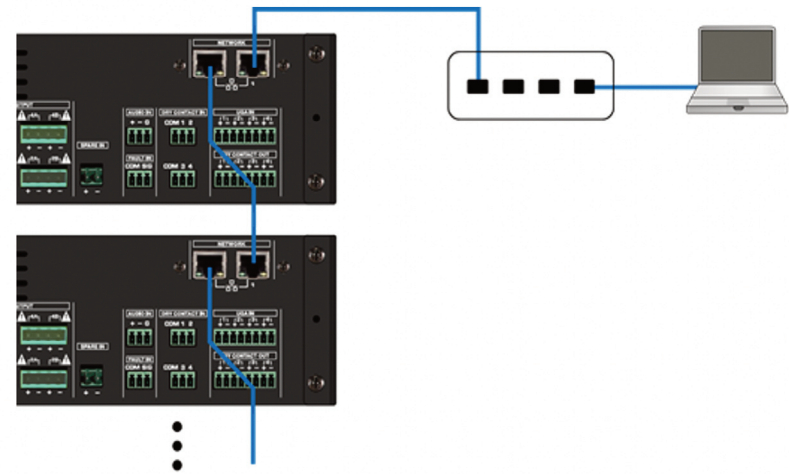


- ※ For operation and setting methods of functions such as contact input/output, line checker, and earth fault, refer to the main controller web page setting manual.

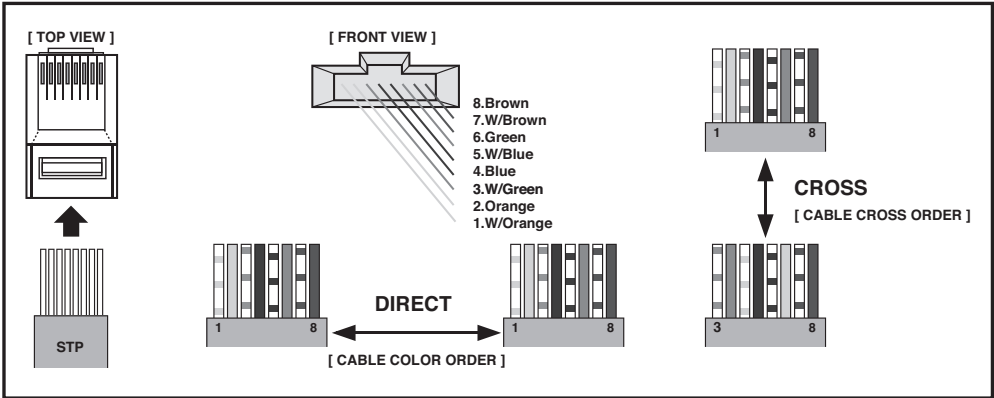
# 11. NETWORK CONNECTING TERMINAL

It is a connection terminal for network configuration. the user can set up the device by connecting with the main controller. It is a Primary 2 port and has an internal switch to allow additional NPA and Daisy-Chain\* connections, and to configure a redundant network.

\*Daisy-Chain: Continuously connected



| <100 Base-T> |          | <1G Base-T> |          |
|--------------|----------|-------------|----------|
| PIN NO       | Function | PIN NO      | Function |
| 1            | TXP      | 1           | MX(0)+   |
| 2            | TXN      | 2           | MX(0)-   |
| 3            | RXP      | 3           | MX(1)+   |
| 4            | NA       | 4           | MX(2)+   |
| 5            | NA       | 5           | MX(2)-   |
| 6            | RXN      | 6           | MX(1)-   |
| 7            | NA       | 7           | MX(3)+   |
| 8            | NA       | 8           | MX(3)-   |



※ Each port supports 100/1000 Base-T. It is recommended to use a gigabit switch for a smooth operating environment.

The diagram illustrates a network-based audio system architecture. At the center is a green box labeled 'LAN' containing a cloud icon and an 'L2 SWITCHING HUB'. Various components are connected to this central hub via LAN lines (green solid lines).

**Left Side Components:**

- MULTI SOURCE PLAYER (CD-6208)** and **DIGITAL TUNER(TU-6200)** are connected to a **NETWORK AUDIO INPUT CONVERTER(NAI-1104)** via an **AUDIO** line (red solid line).
- The **NETWORK AUDIO INPUT CONVERTER(NAI-1104)** is connected to the **LAN** hub.
- A **Fire receiver (P type/R type fire signal)** is connected to the **LAN** hub via a **Fire receiver** line (orange solid line).
- An **Emergency sound source, audio I/O, schedule broadcast, TTS broadcast** unit is connected to the **LAN** hub via a **Emergency sound source, audio I/O, schedule broadcast, TTS broadcast** line (yellow solid line).
- A **NETWORK EMERGENCY PANEL(NEP-1200)** is connected to the **LAN** hub.
- A **CONTROL PC** is connected to the **LAN** hub.

**Right Side Components:**

- A **NETWORK CONTROL SERVER (IPA-100)** is connected to the **LAN** hub.
- Four **NETWORK POWER AMPLIFIER(NPA-2400)** units are connected to the **LAN** hub. The first three are connected to **16 Circuit** lines (red dotted lines) leading to **High quality emergency broadcasting SPEAKER** pairs (nF and 1F). The fourth is connected to a **SPARE AMPLIFIER**.
- A **REMOTE MIC (RM-N1000)** is connected to the **LAN** hub via a **REMOTE MIC** line (green solid line).

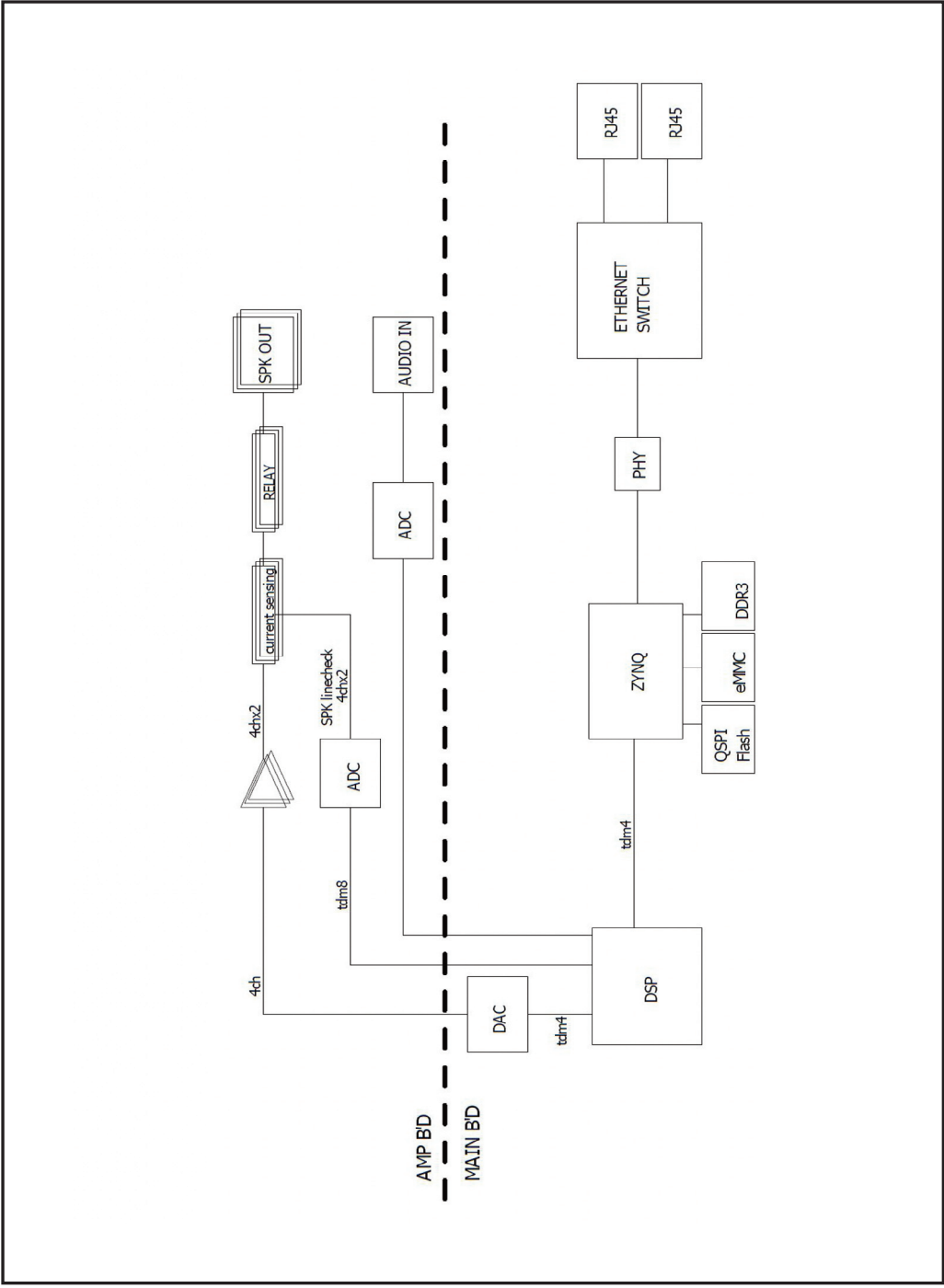
**Legend:**

- AUDIO(MIC/LINE)**: Red solid line
- AUDIO(LOW/HIGH-Z)**: Red dotted line
- CONTACT**: Orange solid line
- SERIAL DATA**: Yellow solid line
- NETWORK(UTP)**: Green solid line

**Callouts:**

- Built-in operating software**: Points to the Network Control Server.
- Emergency sound source, audio I/O, schedule broadcast, TTS broadcast**: Points to the Emergency sound source unit.
- Receiving ADE AUDIO**, **Built-in amp transfer function**, **Short circuit, disconnection detection function**: Points to the Spare Amplifier.
- Control up to 512 zones**: Points to the Network Control Server.

# Block Diagram

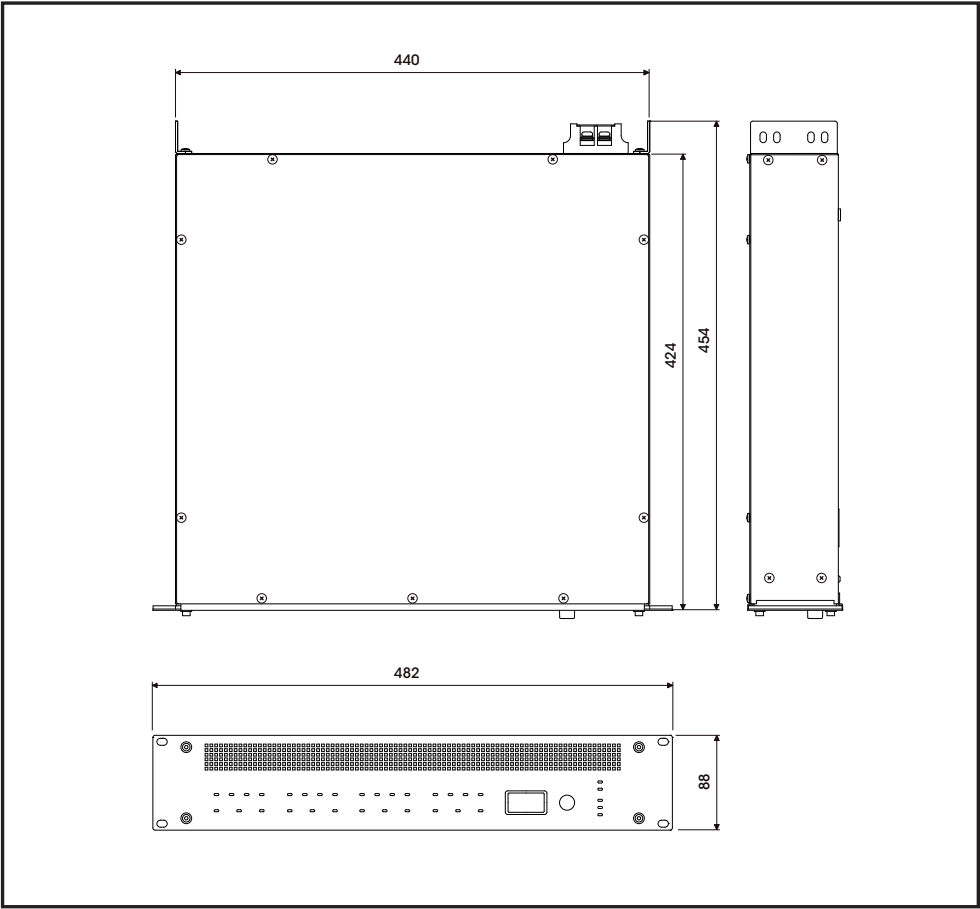


# Specifications

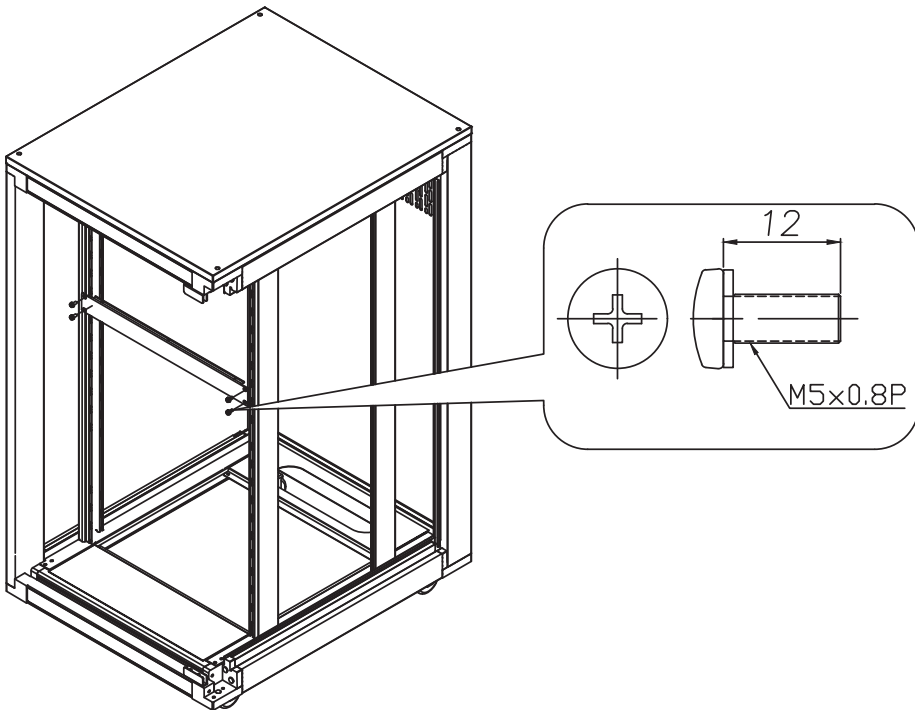
|                                  | NPA-240S                                             | NPA-240D     | NPA-240Q   | NPA-480S     | NPA-480D     |
|----------------------------------|------------------------------------------------------|--------------|------------|--------------|--------------|
| Rated Output Power               | 240W x 1CH                                           | 240W x 2CH   | 240W x 4CH | 480W x 1CH   | 480W x 2CH   |
| Output Level / Impedance         | 100V/41.66Ω                                          |              |            | 100V/20.83Ω  |              |
| Input Sensitivity                | 5 dBV                                                |              |            |              |              |
| THD<br>(Rated Power, 1kHz)       | Less than 1%                                         |              |            |              |              |
| S/N<br>(20kHz LPF, A-wtd)        | More than 85dB                                       |              |            |              |              |
| Frequency Response<br>(±3dB, 1W) | 20~20kHz                                             |              |            |              |              |
| Network                          | Ethernet 100/1000 Base-T (RJ-45)                     |              |            |              |              |
| Operating Temperature            | -10℃~40℃                                             |              |            |              |              |
| Operating Power                  | AC 220-240V, 50/60Hz, DC 24V                         |              |            |              |              |
| Power Consumption                | 135W                                                 | 140W         | 280W       | 135W         | 240W         |
| Weight (SET)                     | 8.4kg/18.5lb                                         | 8.9kg/19.6lb | 10kg/22lb  | 8.4kg/18.5lb | 9.8kg/21.6lb |
| Dimensions (SET)                 | 482(W) x 88(H) x 454(D)mm/19(W) x 3.5(H) x 17.9(D)in |              |            |              |              |

\* Design and specification are subject to be changed for the improvement of product quality without pre notice.

※ DIMENSIONS



## Instructions for use of screws



**This product can be used on a table or fixed to a rack.**

**However, be sure to observe the installation precautions below when using it in a rack.**

1. Place the product in an empty area of the rack.
2. Using the included mounting screws, tighten the 4 mounting holes so that there are no voids and fix them.
3. Please proceed with the wiring for the operation of the product, and apply the power last.
4. Disassemble in the reverse order of the above procedure.
5. In case of fixing by not using the included screws or screws of the same size, or using insufficient number of screws the manufacturer is not responsible for any safety accidents caused by this.

### **Accessories included for fixing the product**

- Specification: SCREW M5x0.8P, L=12
- Quantity: 4pcs

## Service

### Procedures

Take steps to insure the problem is not related to operator error or other products within the system. Information provided in the troubleshooting portion of this manual may help with this process. Once it is certain that the problem is related to the product contact your warranty provider as described in the warranty section of this manual.

### Schematic

A Schematic is available by contacting your warranty provider.

### Parts List

A Parts List is available by contacting your warranty provider.

## Variations and Options

### Variations

Products supplied through legitimate sources are compatible with local AC power requirements.

### Options

No optional items are available for this product.

## Warranty

Warranty terms and conditions vary by country and may not be the same for all products. Terms and conditions of warranty for a given product may be determined first by locating the appropriate country which the product was purchased in, then by locating the product type.

To obtain specific warranty information and available service locations contact Inter-M directly or the authorized Inter-M Distributor for your specific country or region.









Inter-M, Ltd. (Korea) began operations in 1983.

Since then, Inter-M has grown to become one of the largest manufacturers of professional audio and commercial sound electronics equipment in the world.

Inter-M has gained worldwide recognition for its own branded products, as well as private label manufacturing of electronics sold under other names (OEM).

The company is no longer just a Korean company, but rather a global company that is truly international in scope, with factories and offices in Korea and China, and sales and marketing operations located in Japan, Europe, and the U.S.A.

With more than 850 employees around the globe, Inter-M is well-poised for further growth and expansion.

**Inter-M Corporation**

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**MADE IN KOREA**

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