Operation Manual

Audio Over Ethernet

AOE-N300



* Rack mount products in the Western Hemisphere(North America, South America, and the Caribbean) do not have handles installed due to customer preference.

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.

Attentions: Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant on une autre sortie de courant, sauf si les lames peuvent étre insérées à fond sans en laisser aucune partie à découvert.
Pour deconnecter completement l’appareil du reseau d’alimentation. deconnecter le cordon d’alimentation de la prise murale.
La prise du reseau d’alimentation doit demeurer aisement accessible.

WARNING

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

*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 than 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 AOE-N300 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.



Overview

AOE-N300 was developed as a device for remote installation. It enables AUDIO & DATA transmission with a distributed structure of medium/large-scale broadcasting facilities, when there is a limit to the distance between audio and data lines, using TCP/IP Ethernet Network to respond to the system.

Features

- REAL TIME 2 CHANNEL AUDIO SIGNAL TRANSCEIVER (TRANSMITTER/RECEIVER) Ethernet to 2channel analog audio signal real time transmitter, receiver.

- FULL-DUPLEX DATA COMMUNICATION TO ETHERNET NETWORK.
It supports IN/OUT contact data transmission/reception (8 channels each), and serial data transmission/reception (RS-232C, RS-422)

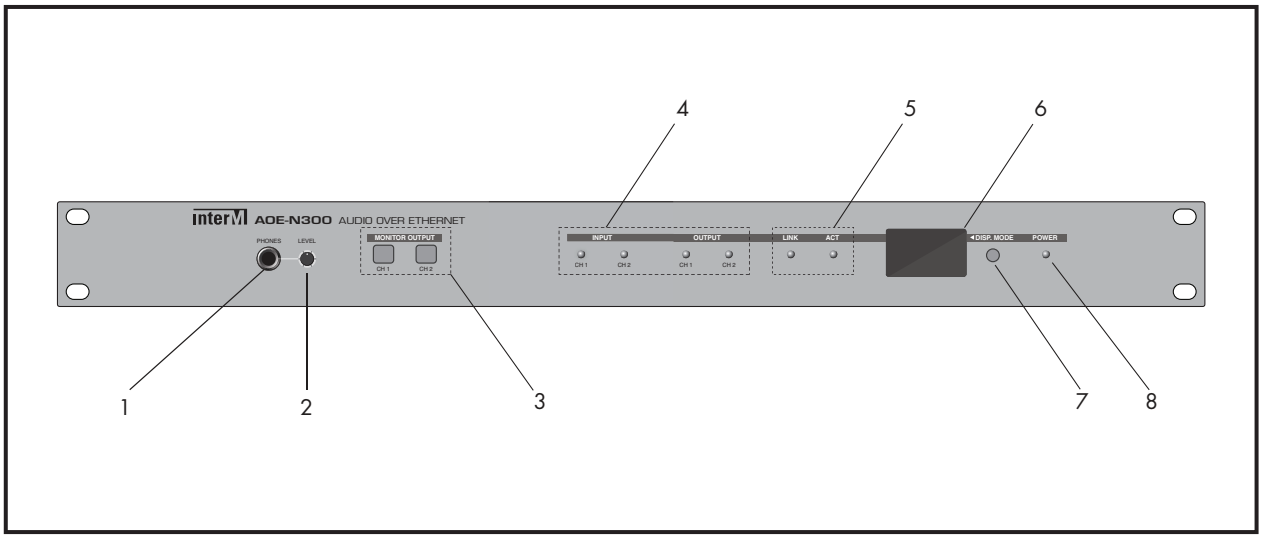
- EXPANSION OF DEVICE
AOE-N300 supports Multicast (1:70) and Unicast (1:20), making it easy to expand

Contents and Accessories

1. **AC Power Cord x 1EA**
2. **3P Terminal Block x 4EA**
3. **4P Terminal Block x 2EA**
4. **16P Terminal Block x 2EA**
5. **RS-232C Cable x 1EA**
6. **Rack Mount Screw x 4EA**
7. **LAN Cable x 1EA**

※ **Notes on network setup**
1. AOE-N300 can be configured with IP as dynamic or static.
2. AOE-N300 uses 5454~5474 port, required for port forwarding or DMZ setting.
3. When using a WAN environment, use a public static IP or dynamic IP provided by an Internet service provider.
4. It is recommended to use a dedicated network.

Front Panel



1. MONITOR TERMINAL (PHONES)
Terminal monitoring the output signal of selected channel by using 3.5 Φ earphone terminal.

2. MONITOR VOLUME (LEVEL)
Control the monitor output volume.

3. MONITOR OUTPUT SELECT SWITCH
Switch selecting the desired channel output to monitor.

4. SIGNAL LED (INPUT/OUTPUT)
LED displaying the input/output audio signals for each channel.

5. LINK/ACT LED
LED displaying the network status and data status of equipment.

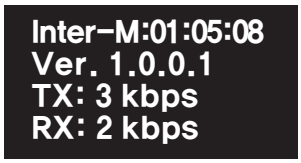
6. LCD
LCD displaying the network (IP, Mac Address, S/W Version, etc.) settings and server connection status in the set.

7. DISPLAY SELECT SWITCH
This switch is for selecting the content displayed on the LCD. Displayed contents will be changed each time when the switch is pressed.

1) IP Address



2) MAC Address, Bandwidth, S/W Version



3) Audio State



(1) Server on/off state
(2) Sever on, Quantity of Client access device
(3) Client on/off state
(4) Accessed server IP

4) RS-232 State



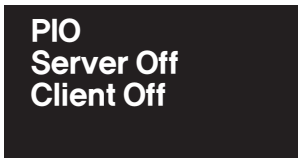
(1) Server on/off state
(2) Client on/off state

5) RS-422 State



(1) Server on/off state
(2) Client on/off state

6) PIO state

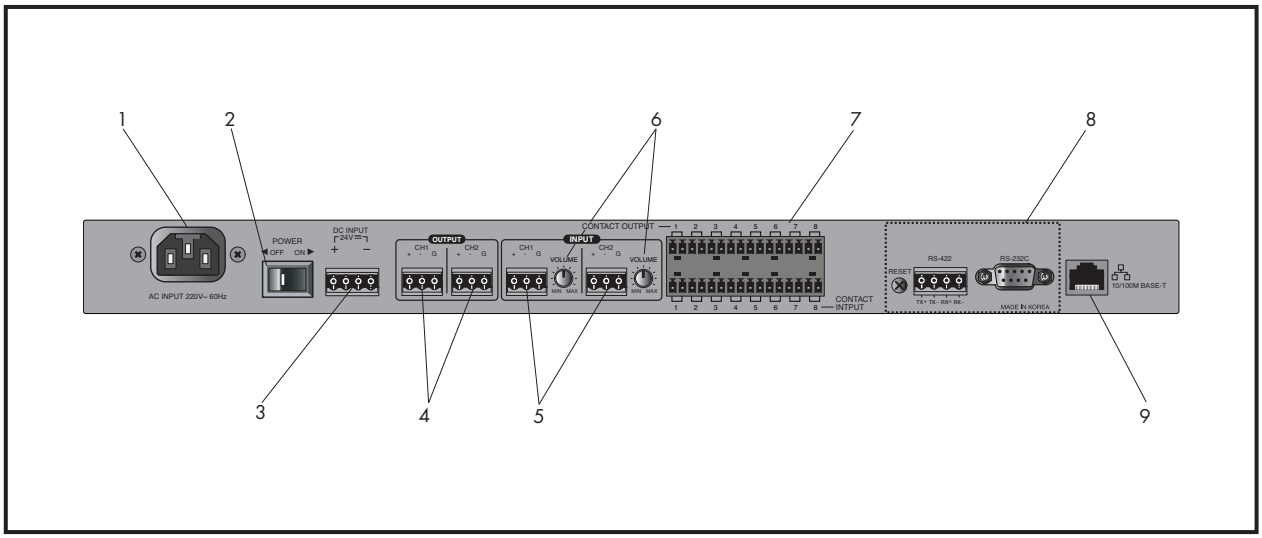


(1) Server on/off state
(2) Client on/off state

8. POWER LED

LED displaying the power supply status of set.

Rear Panel

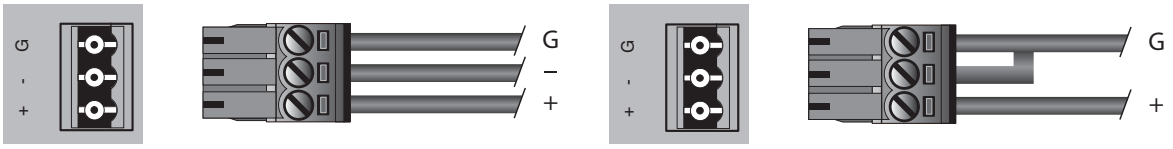


1. AC INPUT TERMINAL
This is the terminal for connecting AC power cord. (AC 220V, 60Hz) Do not bend, pull, twist, heat and cut by force. It may cause electric shock.

2. POWER SWITCH
Switch turning On/Off the AC Power.

3. DC INPUT TERMINAL
Backup battery (24V DC) connecting terminal. In case of black out of AC power, connected backup battery supplies the power to the device. DC 24V input supplies the power to the set regardless of switch On/Off.

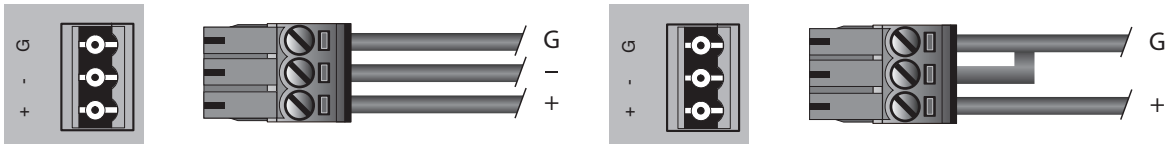
4. OUTPUT TERMINAL
This is the output terminal for the transmitted audio signal. It is a balanced (HOT, COLD, GND) output that contains 2 channels. Recommended to use with a balanced cable. In case of using unbalanced cables, connect referring to the figure below.



[Balanced] [Unbalanced]

5. INPUT TERMINAL

This is the input terminal for the audio signal to be transmitted. It is a balanced (HOT, COLD, GND) input that contains 2 channels. Recommended to use a balanced cable. In case of using unbalanced cables, connect referring to the figure below.



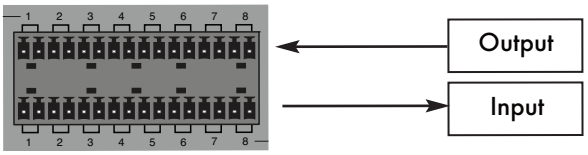
[Balanced] [Unbalanced]

6. AUDIO VOLUME

Control the volume of input audio signal. Control level is (-10dB ~ +10dB)

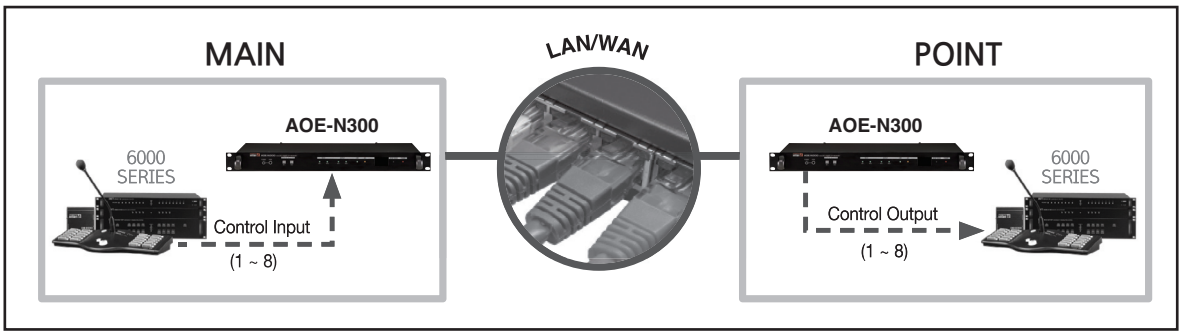
7. CONTACT INPUT AND OUTPUT TERMINALS

When a contact signal is input to each contact terminal of the transmitting AOE-N300 device, the contact signal is output from the corresponding contact output terminal of the receiving AOE-N300 device.



Input contact: Contact signal can be input by shorting the pins of each channel.
For example, if channel 1 is shorted, contact closure is input to channel 1.
Output contact: When a contact signal is input from AOE-N300 set as a server, the contact signal of the corresponding channel is output from AOE-N300 set as a client.
For example, if a contact signal is input to channel 1 of AOE-N300 set as a server, contact signal is output from contact number 1 output terminal of AOE-N300 set as a client.

※ Caution: Contact point signal is only transmitted when AOE-N300 is operated under normal conditions, and please input the signal after checking out the equipment operation status. Because data is transmitted in real times, signal will not be transmitted when device is off.

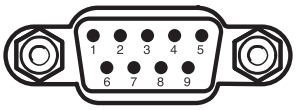


※ Example of Usage: After connecting the equipment to be controlled to the contact output terminal of AOE-N300 at point A, user can control the equipment at point A by control a contact signal from the equipment in the main building.

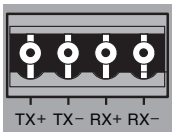
※ For the AOE-N300 server/client setting method, refer to the software manual on the web page. You can download the software manual from our website (www.inter-m.net).

8. RS-232C/RS-422 COMMUNICATION TERMINAL

The signal input through the RS-232C/RS-422 communication terminal from the AOE-N300 set as the server is output through the RS-232C/RS-422 communication terminal of the AOE-N300 set as the client. For example, if you input the signal 'A B C D' from the AOE-N300 set as the server, the signal 'A B C D' will be output on the AOE-N300 set as the client.

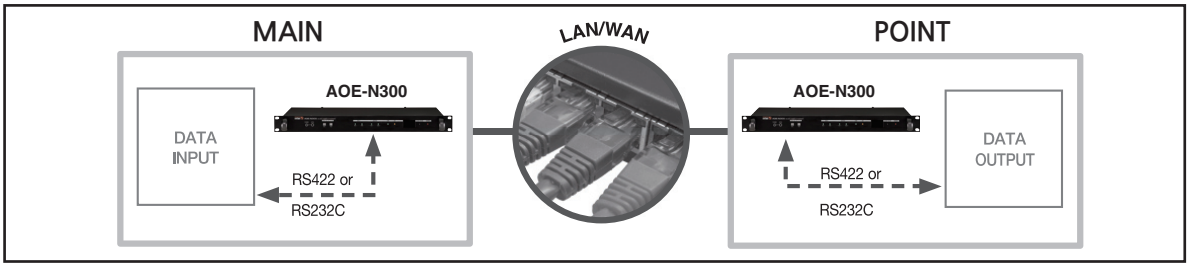


No. 2 pin: RX, No. 3 pin: TX, No. 5 pin: GND
[RS-232C communication]



[RS-422 communication]

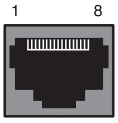
※ Transmit and receive data communication using RS-232C/RS-422 ports supports 1:1



※ Example: Connect the device to be controlled to the RS-232/RS-422 terminal of AOE-212 from point 'A', and insert the control signal from the main building, then device of point 'A' can be controlled.

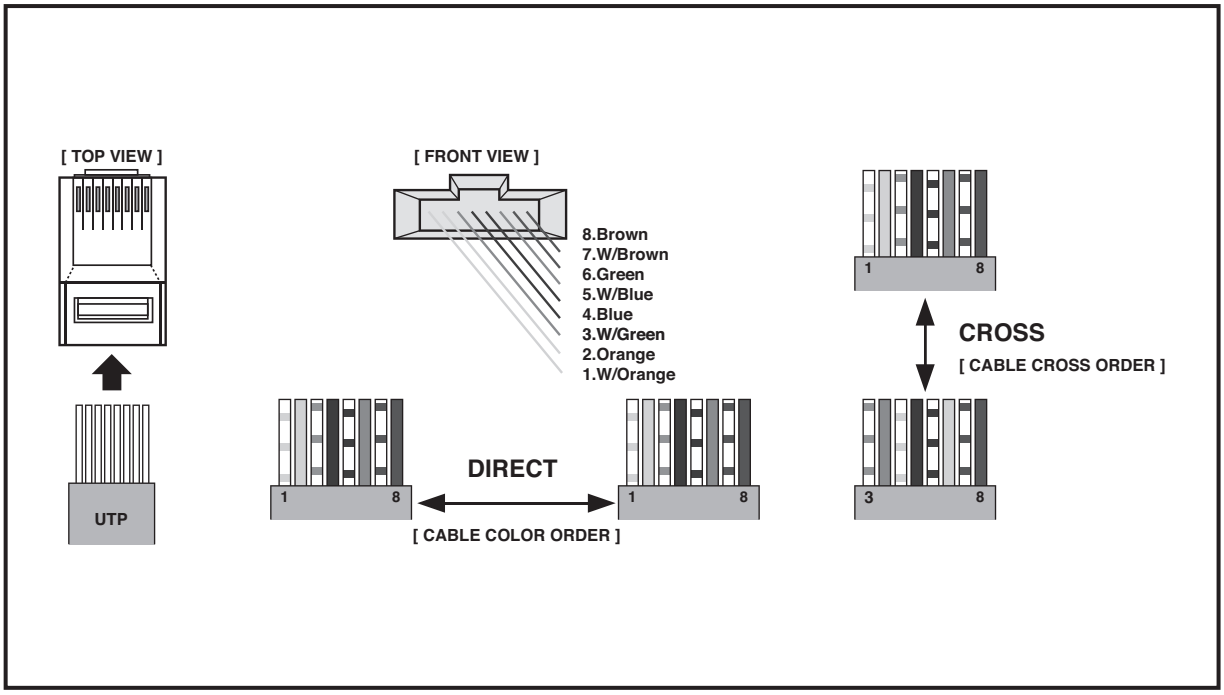
9. NETWORK TERMINAL

It is network connecting terminal (RJ-45) and supports 100/1G Base-T.

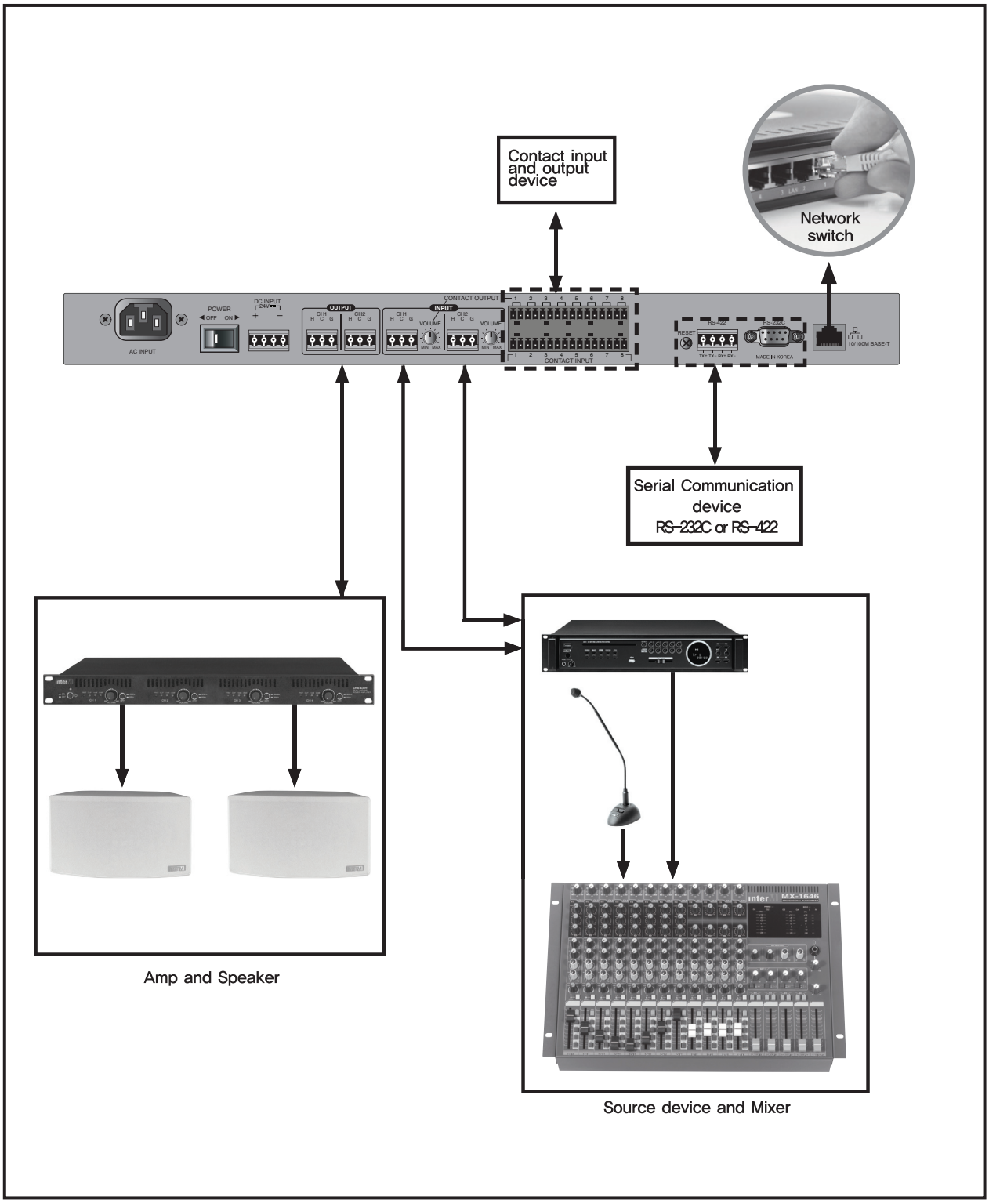


PIN NO	Function
1	MX(0)+
2	MX(0)-
3	MX(1)+
4	MX(1)-
5	MX(2)+
6	MX(2)-
7	MX(3)+
8	MX(3)-

AOE-N300 shall be connected by CAT5E, CAT6 cable.

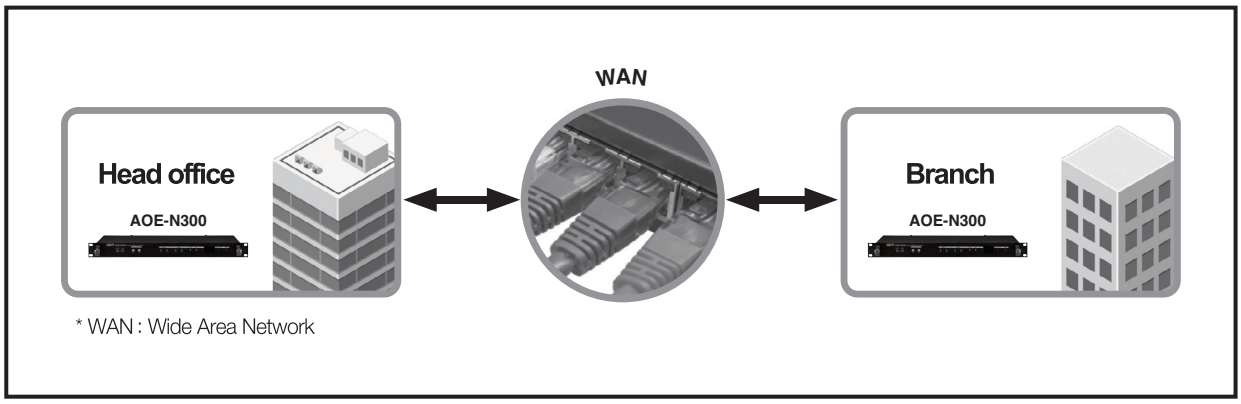


Applications

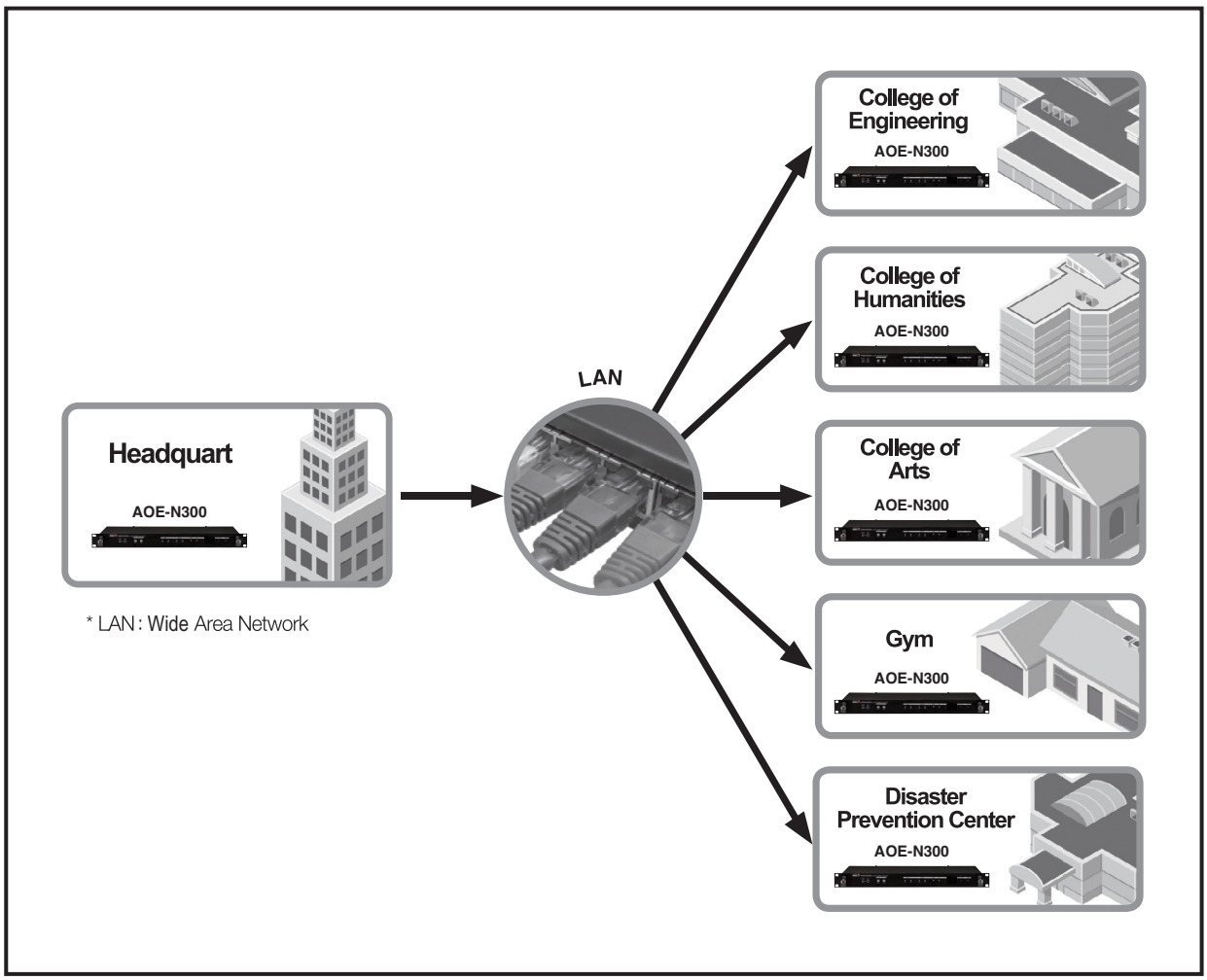


Education institute, commercial facility, business facility, religion facility, gym, exhibition room, facility, leisure facility, them park, etc. 1:1 or 1: N functions are flexible to use in any space.

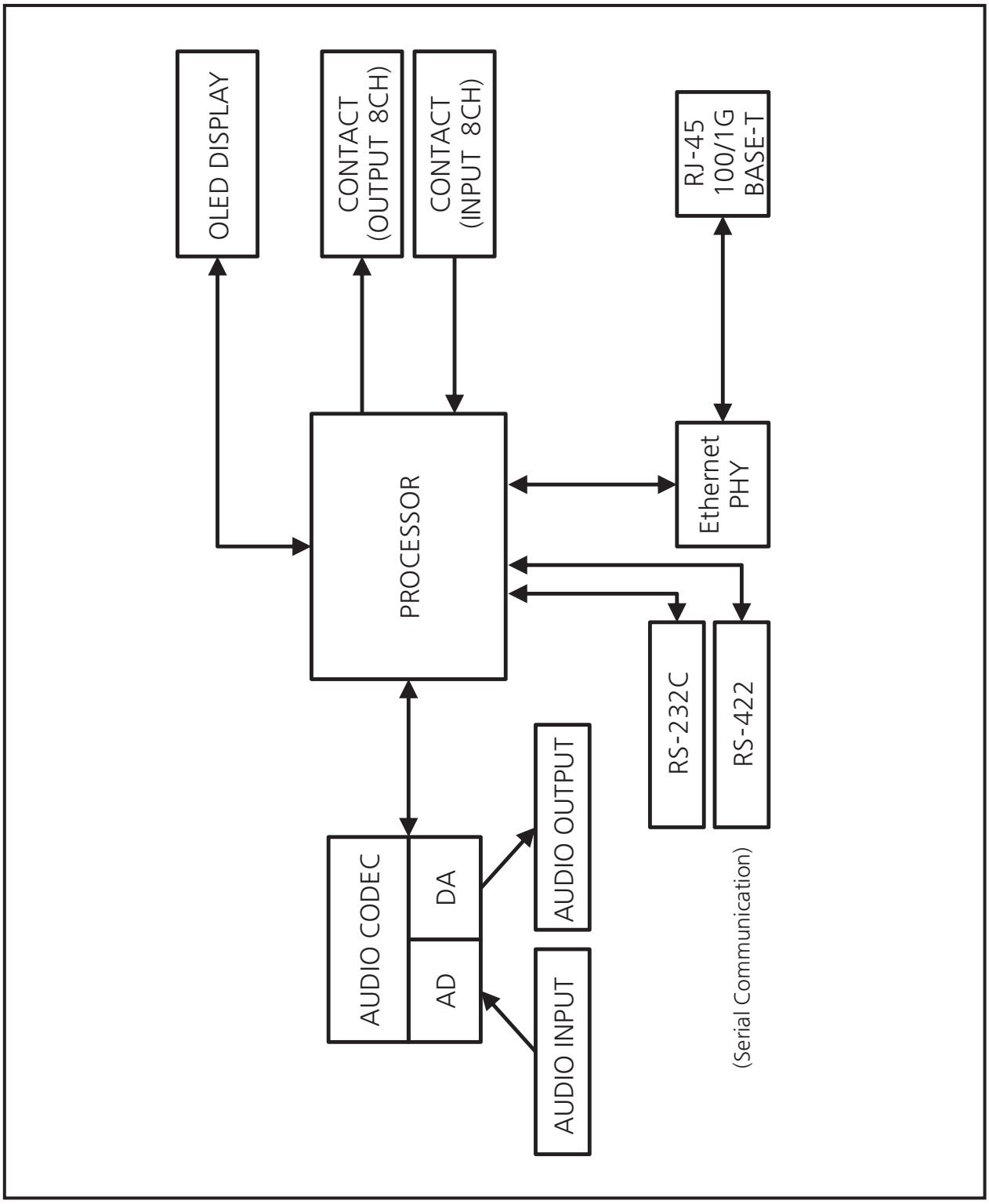
- 1:1 Purpose



- WAN network and LAN purpose (School, resort, theme park, exhibition room, museum, etc.)



Block Diagram



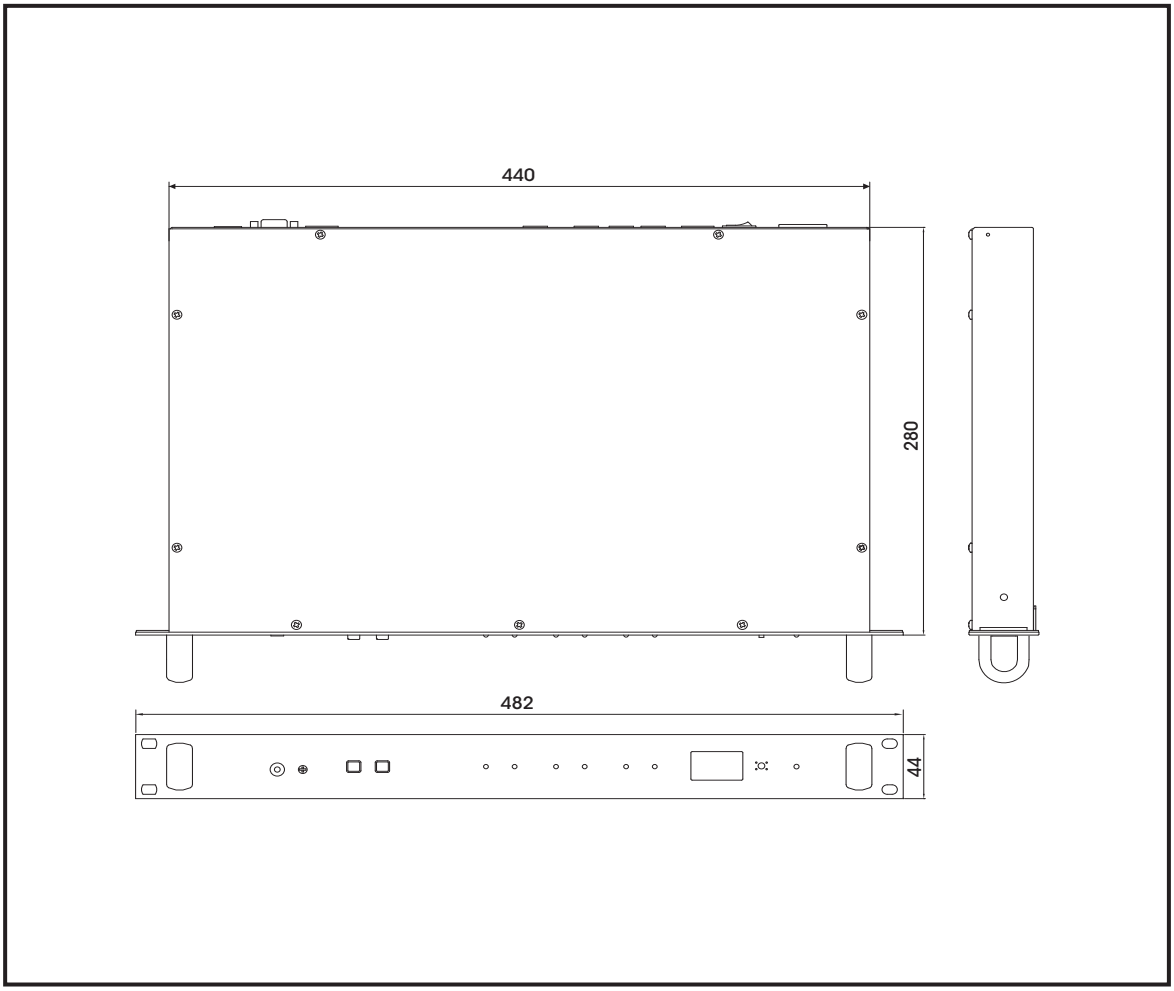
Specifications

	AOE-N300
AUDIO	
Maximum Input Level	+20dBV
Maximum Output Level	+20dBV
Frequency Response (44.1kHz Sampling, ±1dB)	100Hz~20kHz
THD (44.1kHz Sampling)	Less than 0.05%
SNR (20kHz LPF, Input 0dBV, Gain Max)	80dB
Support Sampling Frequency	44.1, 48kHz
Quantization bits	24bit
Data communication	
Communication type	Contact, RS-232C/RS-422
Contact Input, Output	Input 8Channel, Output 8Channel
Serial communication rate	2400bps~115200bps
ETHERNET (LAN)	100/1G Base-T (RJ-45)
General characteristics	
Operating temperature	-10℃~+40℃
Power Source	AC 220V-240V, 50/60Hz, 15W or 24VDC, 0.5A
Weight (SET)	3.02kg/6.65lb
Dimension (SET)	482(W) x 44(H) x 280(D)mm 18.97(W) x 1.73(H) x 11.02(D)in

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

* Signal propagation Latency CL2 Switch 1 via to audio : About 1sec/ Data: about 100ms / Contact : about 100ms.

※ DIMENSIONS



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.

NOTE

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.

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