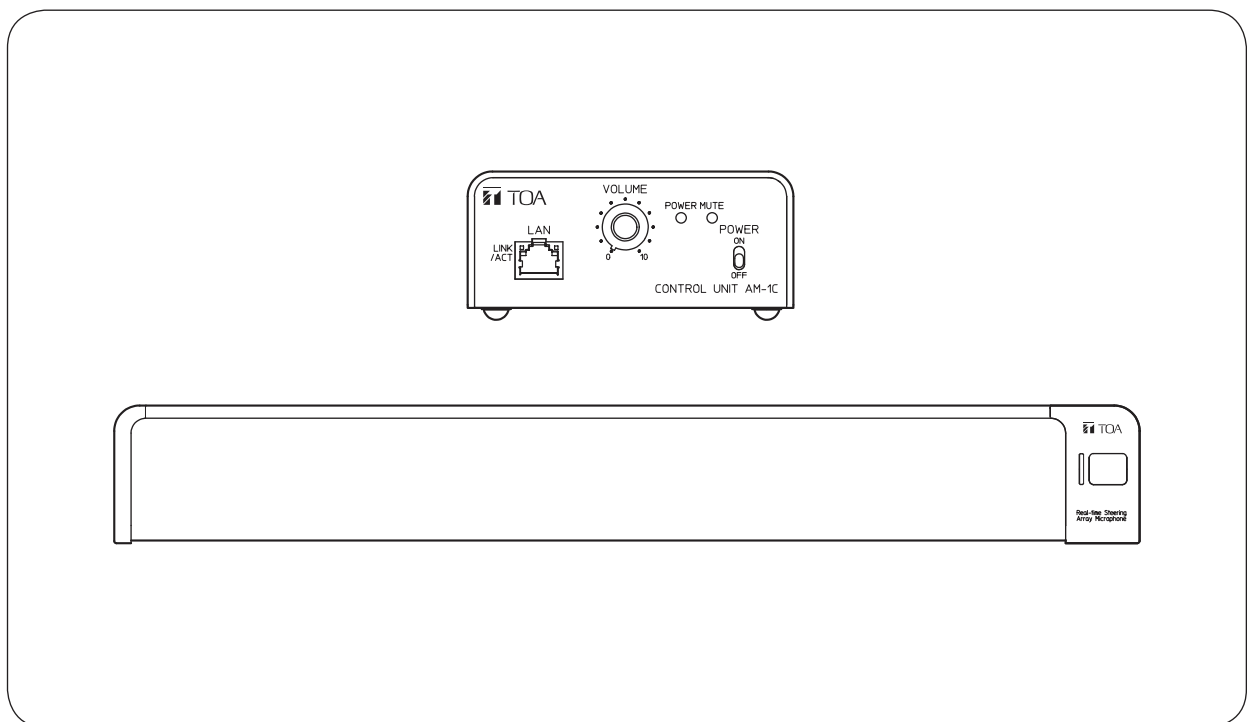




## OPERATING INSTRUCTIONS

# REAL-TIME STEERING ARRAY MICROPHONE SYSTEM

# AM-1



Thank you for purchasing TOA's Real-time Steering Array Microphone System.  
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

TOA Corporation

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# 1. IMPORTANT SAFETY INSTRUCTIONS

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 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.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- 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.

## 2. 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.



### **CAUTION**

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



### **WARNING**

#### 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.
- Since the unit is designed for indoor use, do not install it outdoors. When it gets wet, there is a danger of electric shock.
- The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

#### When the Unit is in Use

- Should the following irregularity be found during use, immediately switch off the power, 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 unit falls, or the unit case breaks
  - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
  - If it is malfunctioning.
- To prevent a fire or electric shock, never open nor remove the unit case and refer all servicing to qualified service personnel.
- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.
- Do not touch the power supply plug during thunder and lightning, as this may result in electric shock.
- The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

## **CAUTION**

### **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.
- The socket-outlet shall be installed near the equipment and the plug (disconnecting device) shall be easily accessible.
- When moving the unit, be sure to remove its power supply cord from the wall outlet. Moving the unit with the power cord connected to the outlet may cause damage to the power cord, resulting in fire or electric shock. When removing the power cord, be sure to hold its plug to pull.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.

### **When the Unit is in Use**

- Make sure that the volume control is set to minimum position before power is switched on. Loud noise produced at high volume when power is switched on can impair hearing.
- Use the specified AC adapter for the unit. Note that the use of other adapter may cause a fire.
- If dust accumulates on the power supply plug or in the wall AC outlet, a fire may result. Clean it periodically. In addition, insert the plug in the wall outlet securely.
- Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. Doing otherwise may cause a fire or electric shock.

### **3. GENERAL DESCRIPTION**

The AM-1 Real-time Steering Array Microphone System is a sophisticated microphone system, capable of detecting a sound source location, and steering the microphone's beam angle automatically in real-time to capture the targeted sound more efficiently. In addition, the unique user-friendly app allows the user to monitor the status of the sound source, and make changes to its detailed setting parameters by using an iPad™.

### **4. FEATURES**

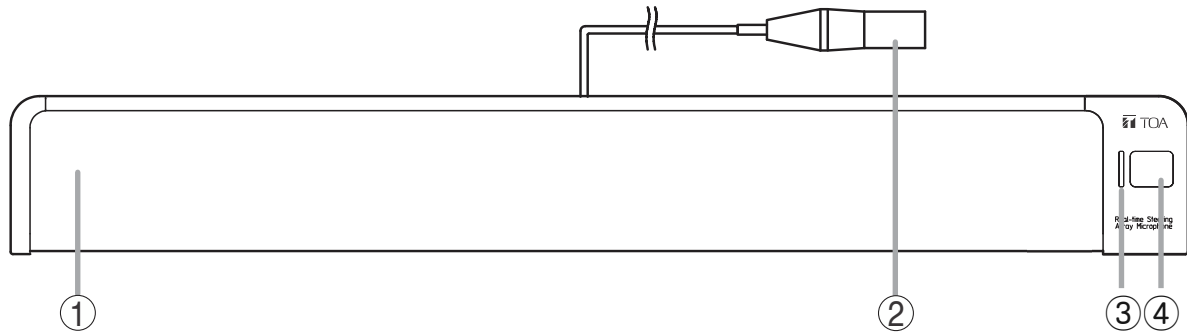
- The microphone unit is equipped with 8 microphone elements able to achieve the line array effect with a narrow horizontal dispersion angle of 50 degrees.
- The unit is able to detect a sound source location and steer the microphone's beam angle automatically in real-time to focus on the targeted sound source.
- The dedicated user-friendly GUI is available for use with an iPad™, which allows monitoring of the sound source tracking status and setting of detail parameters. It is also possible to change the parameter settings via a browser, when using a PC.
- The unit has a simple mute function with a physical mute switch on the microphone unit or through the GUI. The mute switch function of the microphone unit can be disabled through a GUI setting.
- It is equipped with two outputs: adjustable analog audio output level, and AES/EBU digital audio output.

### **5. HANDLING PRECAUTIONS**

- Avoid installing the unit in humid or dusty locations, in areas exposed to the direct sunlight, near heaters, or in places generating sooty smoke or steam as doing otherwise may result in unit failure.
- Take care not to drop the unit onto the floor nor bump it against a hard object as the unit could fail.
- Avoid using a mobile telephone near the microphone in use. Noise could be picked up.
- To clean, be sure to first power off the control unit, then wipe with a dry cloth. When the unit gets very dirty, use a cloth dampened in a neutral cleanser. Never use benzene, thinner, alcohol, or a chemically-treated cleansing cloth because such volatile liquids could deform or discolor the unit.

## 6. NOMENCLATURE AND FUNCTIONS

### [MICROPHONE]



#### 1. Microphone grill

For the unit to perform appropriately, this grill should not be covered with any objects.

#### 2. XLR connector

Connect to the MIC input terminal of the control unit.

#### 3. Microphone status indicator

Lights when microphone is on, and turns off when muted or the "Mute Control" function is off.

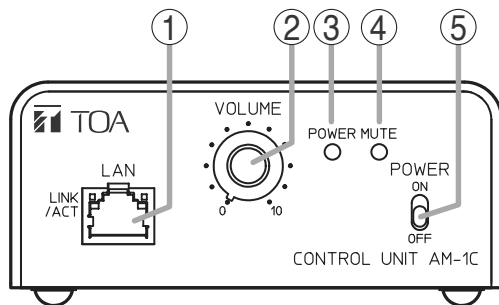
#### 4. Mute switch

Touch sensor switch to mute the output audio signal.

Note: When the touch sensor does not respond well, please make sure that the "SIGNAL GND" terminal located on the rear panel of the control unit is connected to earth ground.

### [CONTROL UNIT]

#### • Front



#### 1. Network connection terminal [10/100M]

Connect a 10BASE-T or 100BASE-TX compatible network. (Ethernet RJ45 jack)

#### 2. Volume control

Adjust the audio output level. Rotate the knob clockwise to increase and counterclockwise to decrease the volume

#### 3. Power indicator

Lights when the power switch is on.

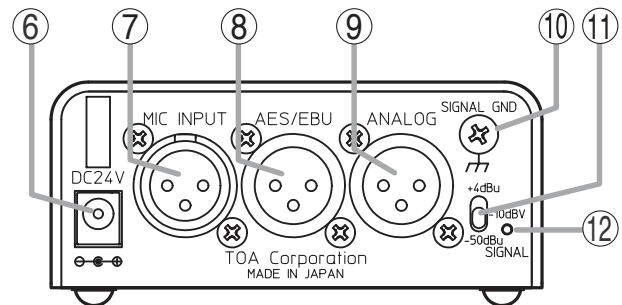
#### 4. Mute indicator

Lights when the audio signal is muted by the mute switch on the microphone or in the software.

#### 5. Power switch

To turn on the power, set this switch to the ON position. To turn off the power, set this switch back to the OFF position.

#### • Rear



#### 6. DC inlet terminal

Connect the AC adapter.  
\*Use the AD-246 or its equivalent.

#### 7. MIC input terminal

Connect to the microphone unit with a shielded twisted-pair cable. (XLR-3-31 equivalent)

#### 8. AES/EBU digital output terminal

Digital output terminal of AES/EBU format. (XLR-3-32 equivalent)

#### 9. Analog output terminal

Analog output terminal. (XLR-3-32 equivalent)

#### 10. Functional earth terminal

Ground this terminal.

**Note:** This ground is not for protective ground.

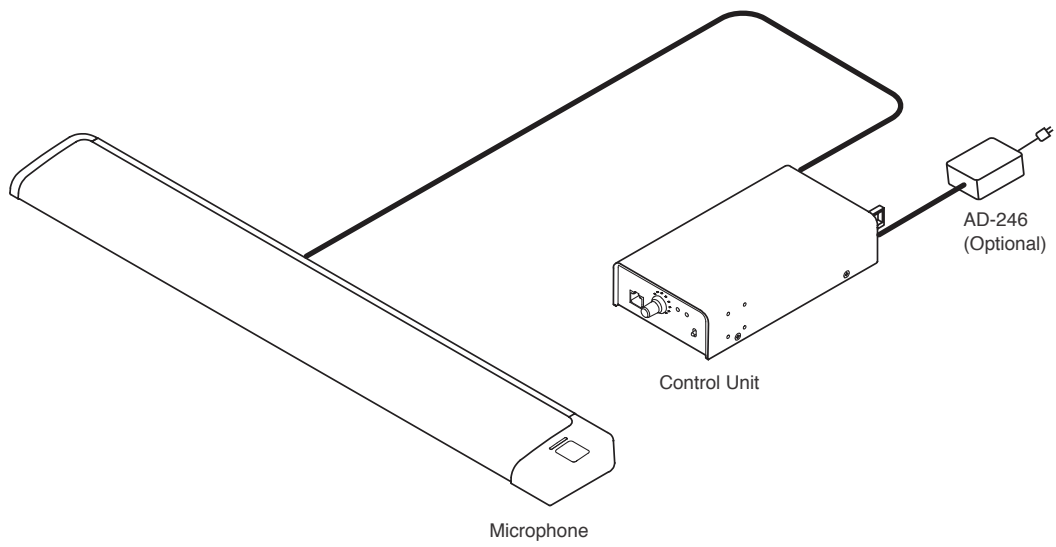
#### 11. Output level select switch

Adjust the analog output level from +4 dBu, -10 dBV, or -50 dBu.

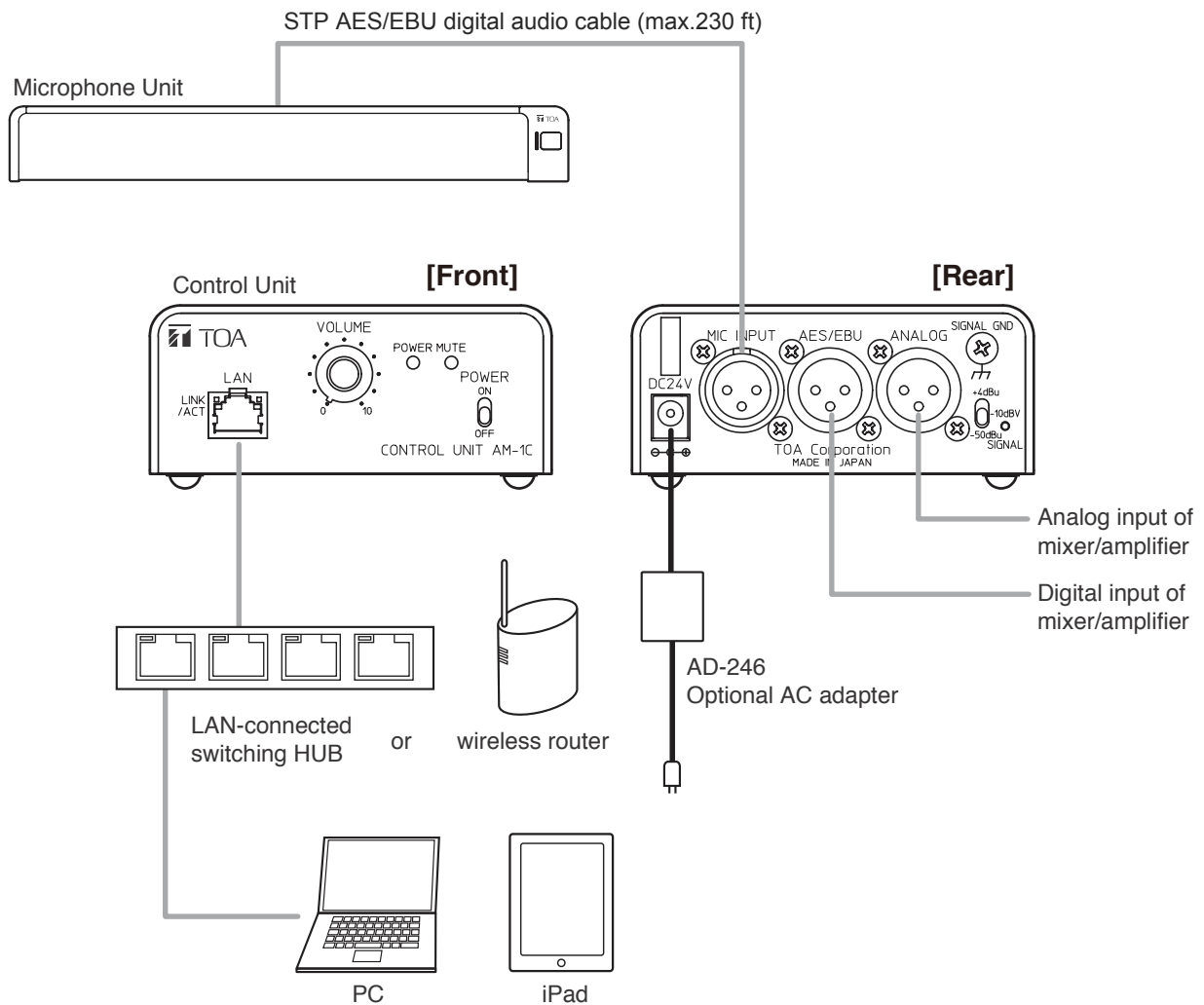
#### 12. Signal indicator

Lights when the input signal level exceeds about -20 dB.

## 7. SYSTEM CONFIGURATION



## 8. CONNECTIONS

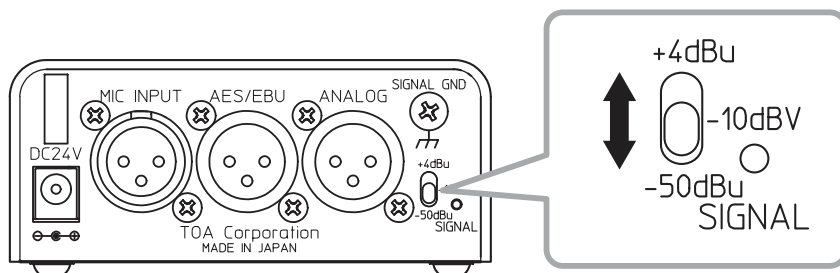




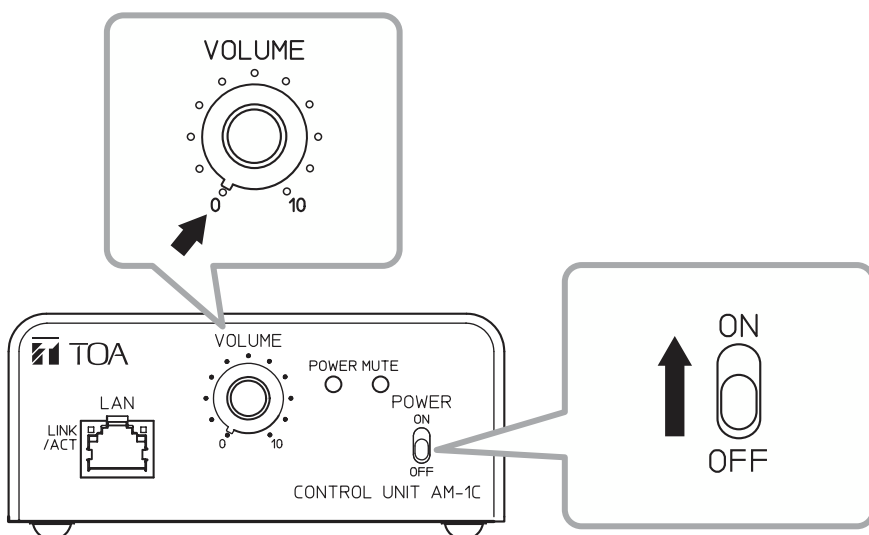
## 9. GENERAL SETUP

**Step 1.** Confirm all devices are connected properly with specified cables and connectors.

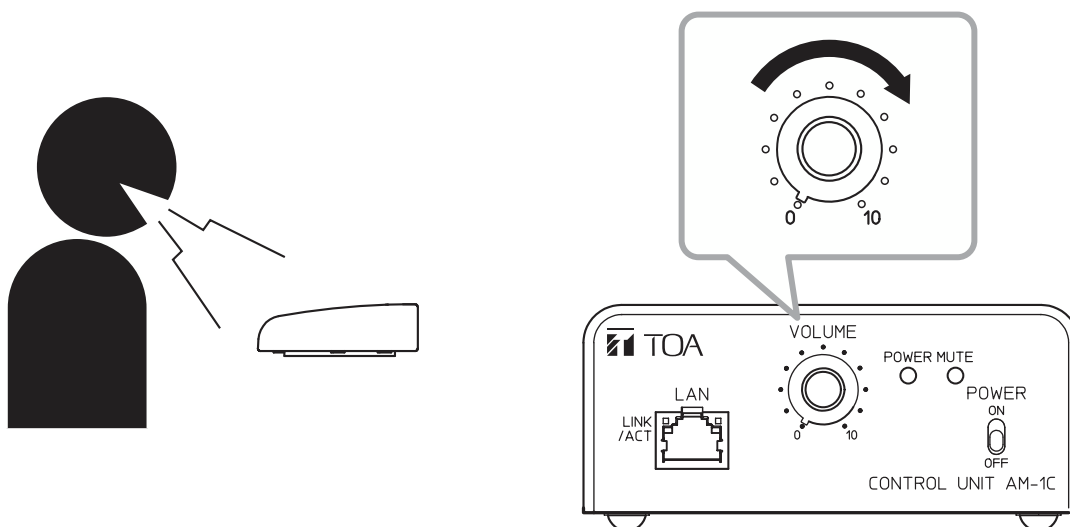
**Step 2.** Adjust the analog output level to match the input level of connected mixer or amplifier.



**Step 3.** Make sure the volume control is set to minimum position, and then turn on the control unit's power switch.



**Step 4.** While speaking to the microphone from an appropriate distance, adjust the output level with the volume control.



## 10. SYSTEM SETTINGS

The detail parameter settings and monitoring feature is available for use with a PC or an iPad®, which allows the operation of the following key items; the parameter settings can be also performed via the PC's browser.

### [Real-time monitoring]

- Detection of sound source location
- Signal level of 8 individual microphone elements

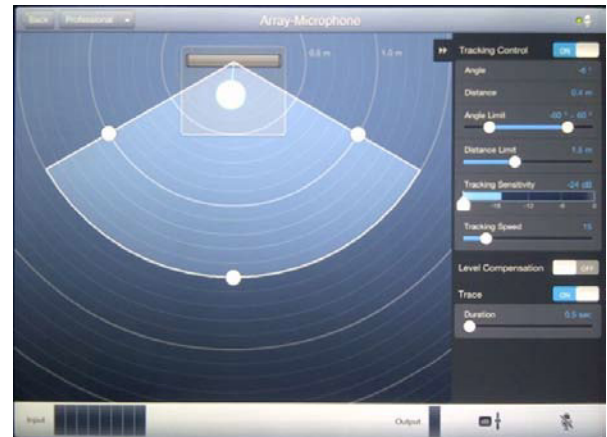
### [Parameter settings]

- Tracking range (Horizontal angle and distance)
- Tracking sensitivity
- Tracking speed
- Gain compensation  
ON/OFF, Distance adjustment threshold
- Duration (Time monitoring of sound source footprint)
- Disabling of MUTE switch function on the microphone
- Output gain level adjustment

### [Operation]

- Mute ON/OFF

Dedicated GUI



The dedicated iPad® app "AM-1" is free to download from the iTunes® App Store.

# 11. SPECIFICATIONS

## • MICROPHONE

Power Source	24V DC/200 mA (supplied from Control Unit)
Maximum Input Sound Level	100 dB SPL (at 20" distance)
S/N Ratio	90 dB or more (from Control Unit)
Frequency Response	150 - 18,000 Hz
Directional Angle	Horizontal : 50 ° (450 - 18,000 Hz, Array mode) , 180 ° (Cardioid mode) Vertical : 90 °
Mute Switch	Touch sensor
LED Indicator	Mute (red), In operation (blue)
Cable	STP ASE/EBU digital audio cable
Maximum Cable Length from Control Unit	230 ft (70 m)
Dimensions	19.0" (W) x 0.8" (H) x 2.6" (D) (482 x 20 x 65 mm)
Weight	2.4 lb (1.1 kg)

## • CONTROL UNIT

Power Source	24V DC/400 mA, from an optional AD-246 AC adapter
S/N Ratio	90 dB over
Microphone Input	Dedicated input for Microphone Unit, XLR-3-31 equivalent
Audio Output	Analog: +4 dBu , -10 dBV, -50dBu (selectable), XLR-3-32 equivalent Digital: AES/EBU 24bit 110 Ω, XLR-3-32 equivalent
Control	Output volume control, Output level adjustment
LED Indicator	Power (blue), Mute (red)
Ethernet	100/10 Mbps (Category 5, RJ45 jack), TCP/IP HTTP
Dimensions	4.1"(W) x 1.9"(H) x 8.7"(D) (105 x 48 x 221 mm)
Weight	1.3 lb (0.6 kg)

## • Optional product

AD-246 AC Adapter

