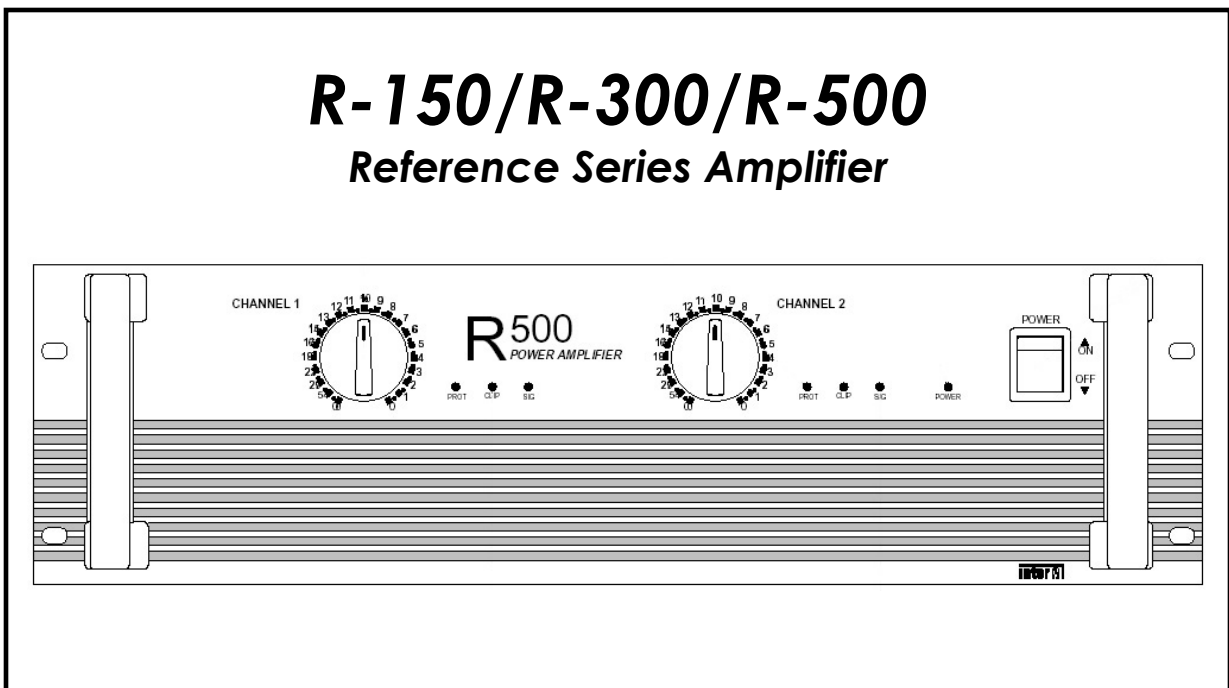


# Operating Manual

## R-150/R-300/R-500 Reference Series Amplifier



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**interM**

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## Welcome

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

Thank you for purchasing this fine Inter-M product. All of us here at Inter-M are dedicated to providing you with the highest quality products and the best value.

We sincerely trust this product will provide you with 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 a part of our worldwide extended family!

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## Unpacking

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Although your R-150/R-300/R-500 Reference Series Amplifier 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.

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## Warnings

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### **Environment**

Never place this product in an environment that could alter its performance or reduce its service life. Such environments are usually characterized by high levels of heat, dust, moisture, or vibration.

### **Safety**

1. Read these instructions carefully.
2. Follow all instructions.
3. Keep all warnings.
4. Do not operate this apparatus near water.
5. Clean only with a damp cloth.
6. Do not block any of the ventilation openings.
7. Install only in accordance with the instructions in this manual.

8. Do not install near any heat sources such as radiators, heat registers, stoves, or other devices (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 is 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 it is attached to the apparatus.
11. Use only the attachments/accessories specified.
12. Use only with a cart, stand, tripod, bracket, or table specified, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid overturning.
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.

 <p><b>CAUTION</b> RISK OF ELECTRIC SHOCK DO NOT OPEN</p> <p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>	 <p>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.</p>  <p>This symbol is intended to alert the user to the presence of important operation and maintenance (servicing) instructions in the literature accompanying the appliance.</p> <p>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.</p>
<p><b>WARNING</b></p> <p>To prevent fire or shock hazard, do not expose the unit to rain or moisture.</p> <p>*Do not install this equipment in a confined space such as a book case or similar unit. *The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus. *Worded: "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."</p>	<p>Attention: 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.</p>

## Operation

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Make certain that speakers and input sources are properly connected before switching AC Mains power on.

Keep volume levels at minimum gain before switching on.

**NOTE:** The system's operation is delayed by approximately three seconds after pressing the AC Mains power switch. This is due to the built-in protection circuitry, designed to protect speakers and other system components.

## **R-150/R-300/R-500 Power Amplifier**

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### **Features**

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#### **High Performance Monitor Amp**

- Studio quality monitor amp provides clean sound for the studio, conference room, concert hall and commercial installations.

#### **Advanced Protection Circuitry**

- Thermal and current overload protection, short and open circuit protection, power-on delay, for component and loudspeaker protection.

#### **Ultra-Efficient Cooling System**

- Convection cooling uses no fan, providing ultra-quiet performance in critical applications.

#### **Bridged Mono and Input Parallel Operation**

- Bridged mono and input parallel modes for increased power and versatility.

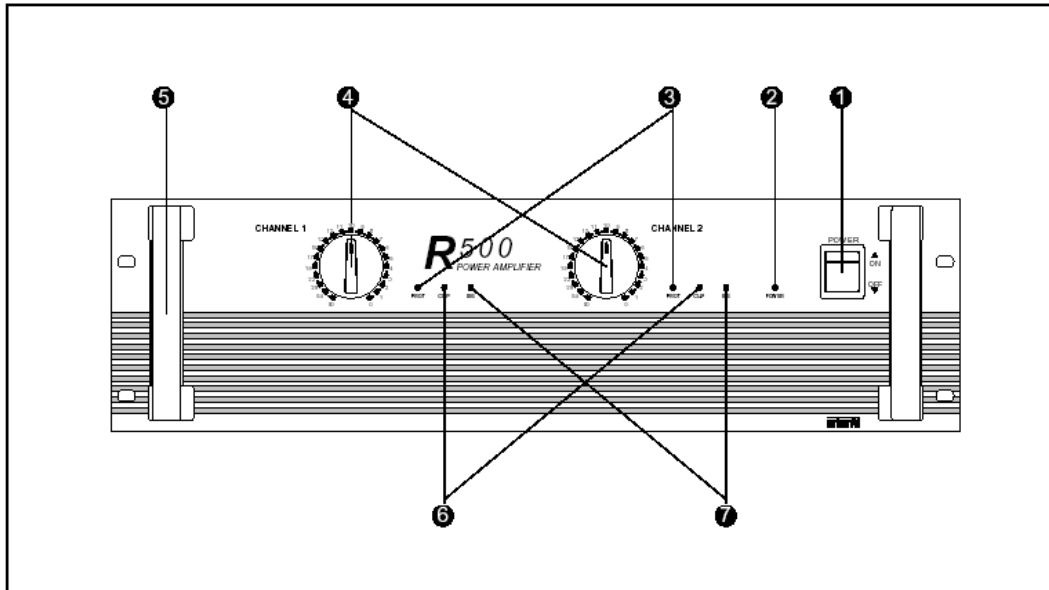
#### **Versatile Connectivity**

- Balanced and unbalanced inputs on XLR and 1/4" phone connectors, as well as speaker connect and five-way binding post output connectors to accommodate a wide array of system options.

#### **LED Indicators**

- Front panel LED indicators show power, clip, protection and level status.

## Front Panel Controls



### 1. Power Switch

Pushing this switch up switches the unit on. Pushing it down switches the unit off.

### 2. Power Indicator LED

When the unit is switched on, the Power LED will glow steadily.

### 3. Protection Indicators

There are two protection indicator LEDs – one LED for Channel 1 of the amplifier and one LED for Channel 2. These LEDs indicate the state of the amplifier's protection circuitry. When the Protection LED is on (illuminated), the protection circuitry is active, indicating that the unit is not operating normally. This is typically due to overheating or power limiting. Please check the Input and Output condition of the amplifier.

(Note that the Protection Indicators light for approximately six seconds when the amplifier is first switched on.)

The amplifier offers the following modes of protection:

**Thermal Protection:** Activates when internal operating temperature exceeds 100° Celsius.

**Compressor/Limiting:** When maximum output power is reached, output level will be reduced to avoid distortion.

**DC Fault Protection:** DC detection circuitry shuts the speaker output when a DC fault voltage of  $\pm 3\text{dB}$  or greater is detected.

**Power On/Off Muting:** Audio to speakers is delayed for several seconds on powering on and off to reduce potential speaker damage from transients.

**4. Input Attenuators**

These are detented controls for regulating each channel's input level. Clockwise rotation increases gain.

**5. Handles**

Use these handles to easily move the amplifier.

**6. Clip Indicators**

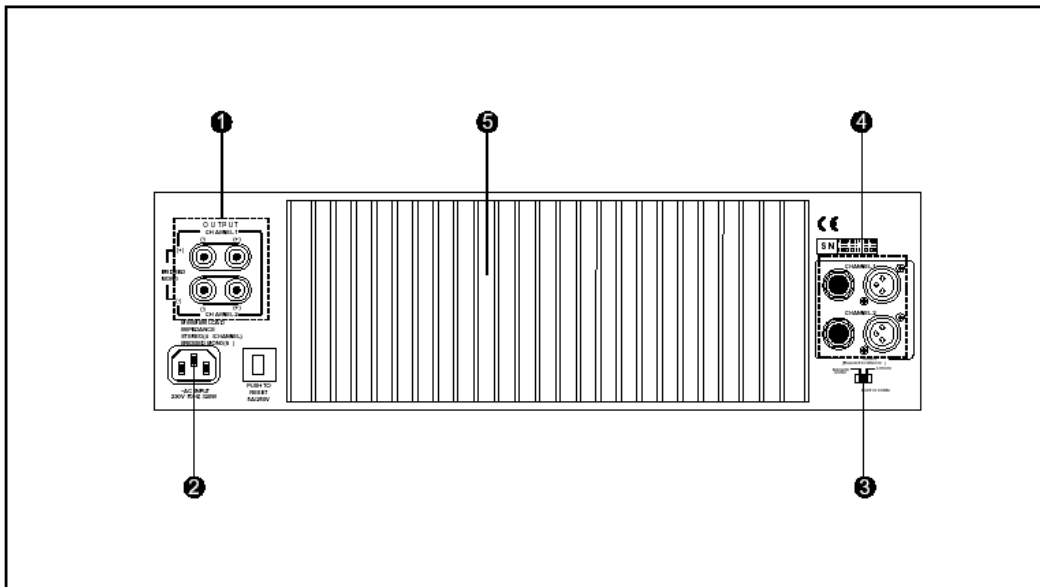
The red CLIP LED indicates an excessive output level, lighting when distortion reaches approximately 1%. Do not operate the unit with the CLIP LED steadily illuminated.

**7. Output Level Indicators**

The LEVEL LED indicates the amplifier's output status, lighting when audio signal reaches  $-15\text{dB}$ .



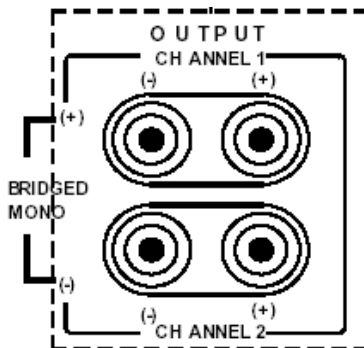
## Rear Panel Controls



### 1. Speaker Output Terminals

These five-way binding posts and speaker connect jacks are used to connect speakers to the unit.

Speakers may be connected in Stereo or Bridged Mono mode. Please refer to the illustrations below. When connecting speakers in Bridged Mono mode, use the Channel 1 "+" output for the positive lead, and the Channel 2 "+" for the negative lead.



### 2. AC Connector

Connect the supplied standard AC input cable here.

### 3. Mono/Stereo Mode Selector

Use this slide switch to select either Stereo or Bridged Mono operation. When Bridged Mono mode is selected, only Channel 1 is active. Use the Channel 1 Input Attenuator to set input level, and refer to the corresponding indicator LEDs for operating status.

**4. Input Connectors**

Balanced input connectors are provided on XLR jacks, while unbalanced connections can be made using the 1/4" phone jacks. (When operating in Bridged Mono mode, only Channel 1 input is active.)

**5. Heat Sink**

Heat is emitted via the external HEAT SINK when the amplifier is switched on. When the amplifier is rack mounted, we recommend that you keep the rear of the rack open in order to release heat.

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## Operational Modes

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### **Stereo Mode**

In Stereo mode, channels A and B operate independently, with each channel feeding its own amplifier circuit. In this mode, minimum speaker impedance per channel is  $4\Omega$ .

### **Bridged Mono Mode**

In Bridged Mono mode, both amplifier channels are bridged together and function as a single-channel amplifier. Only the Channel 1 input is active, and only the Channel 1 Input Attenuator controls the amp's output. In this mode, minimum speaker impedance per channel is  $8\Omega$ .

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## Speaker Impedance and Connections

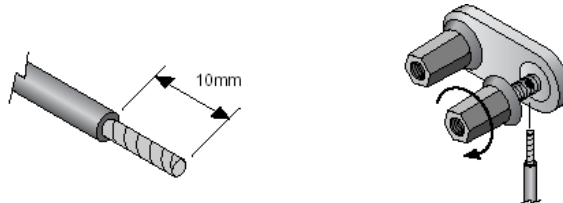
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The minimum speaker impedance is wholly dependent on the operational mode of the amplifier. It is critical that the minimum impedance not equal less than the recommended impedance.

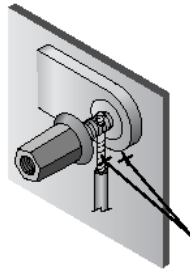
## Speaker Connection Procedures

Always switch the power off before connecting speakers.

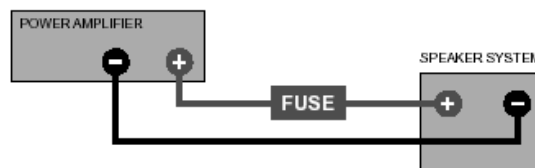
After removing approximately 10mm (1/4 inch) of insulation from the ends of the speaker cables, twist the strands tightly and pass the bare ends through the holes in the terminals, tightening the terminals to secure the wires.



Make certain the wires do not protrude from the terminals and touch the amplifier's chassis, or an adjacent terminal.



The R-150/R-300/R-500 is capable of very high output levels. Be certain to use a speaker system that can accept high input levels. If the input capacity of your speaker system is less than the amplifier's rated output, you may protect your speakers by connecting a fuse between amplifier and speaker, as shown below:



Use the following formula to determine the needed fuse rating:

$$P_o = I^2 R \rightarrow I = \sqrt{\frac{P_o}{R}}$$

$P_o$  (W) = Speaker's continuous input capacity (RMS)

$R$  ( $\Omega$ ) = Speaker's nominal impedance

$I$  = Required fuse rating.

For example: if the speaker's input capacity is 100W, with 8 $\Omega$  impedance,

$$I = \sqrt{\frac{100}{8}} = 3.5$$

The required fuse rating is 3.5A.

## **Speaker Cable**

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Always use the heaviest-duty (lowest gauge) speaker cable available. The terminals can accommodate very thick speaker cable.

## **Maintaining Proper Polarity**

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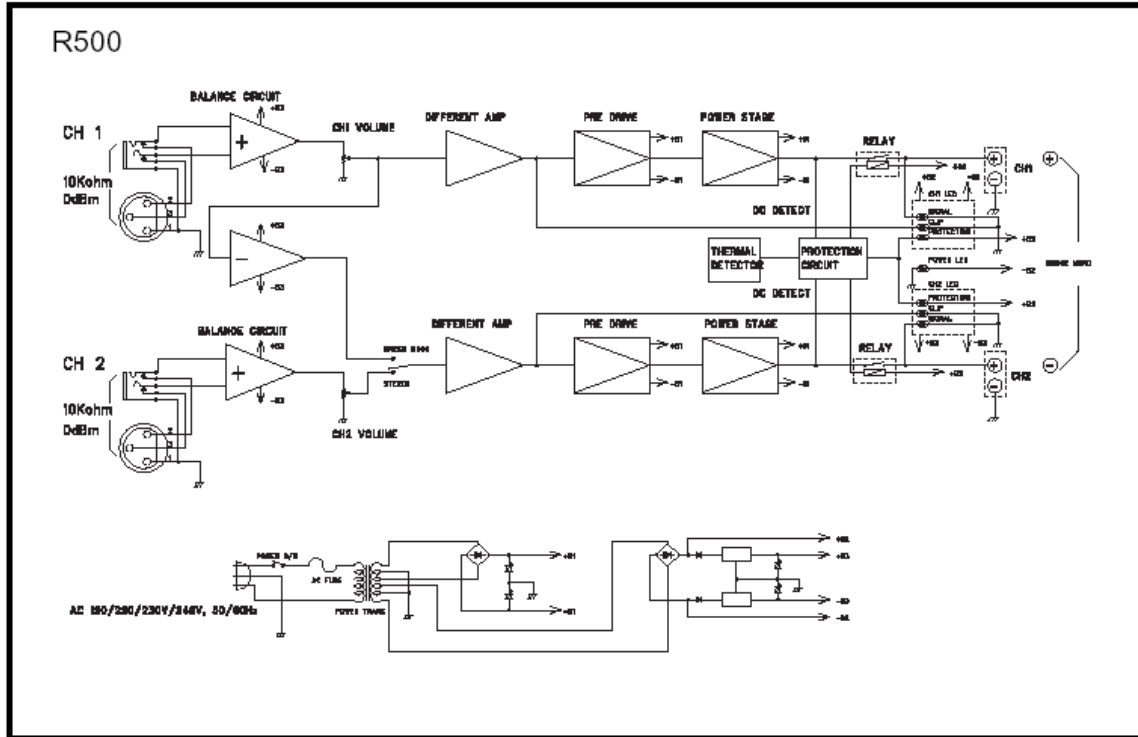
It is very important to wire your speaker connectors consistently at each end of each cable, in order to maintain proper polarity. All quality cables are manufactured with clear markings to identify the different conductors – normally by color-coding, printed markings, or textured ribbing on the cable's jacket material. Always make certain to correctly wire your connections so that tip is connected to tip, and sleeve to sleeve. Failing to do so will cause your speakers to operate out of phase, resulting in significantly reduced low-frequency output from your system.

## **Rack Mounting Your Amplifier**

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The amplifier expels heat through the rear panel heat sink. When mounting in a portable equipment rack, maintain adequate ventilation by making certain the front and rear panels are not obstructed.

# Block Diagram



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## Specifications

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### Rated Output (RMS)

	<b>R-150</b>	<b>R-300</b>	<b>R-500</b>
<b>Stereo 8Ω, 1kHz (per channel)</b>	50W	100W	170W
<b>Stereo 4Ω, 1kHz (per channel)</b>	75W	100W	250W
<b>Bridged Mono 8Ω, 1kHz</b>	150W	300W	500W

<b>Frequency Response (<math>\pm 0.5\text{dB}</math>)</b>	20Hz-50kHz
<b>Input Sensitivity</b>	0.775V
<b>Input Impedance</b>	10k (balanced)
<b>T.H.D</b>	< 0.03%
<b>S/N</b>	-105dB
<b>Damping Factor</b>	> 100
<b>Slew Rate</b>	$\pm 30\text{V}/\mu\text{ sec.}$
<b>Protection</b>	Switch On Delay, Thermal, DC Fault, PC Limiter

### GENERAL

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<b>Power Source</b>	AC 110V-240V, 50/60Hz,
<b>Power Consumption</b>	
<b>R-150</b>	140W
<b>R-300</b>	210W
<b>R-500</b>	330W
<b>Weight</b>	
<b>R-150</b>	7.5kg/16.5lb
<b>R-300</b>	8.2kg/18lb
<b>R-500</b>	13.6kg/29.9lb
<b>Dimensions</b>	
<b>R-150/R-300</b>	482(W) x 88(H) x 210(D) mm 19(W) x 3.5(H) x 8.3(D) inches
<b>R-500</b>	482(W) x 132(H) x 280(D) mm 19(W) x 5.2(H) x 11(D) inches

*Specifications and design subject to change without notice for improvements.*



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 AMERICAS, INC.**

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