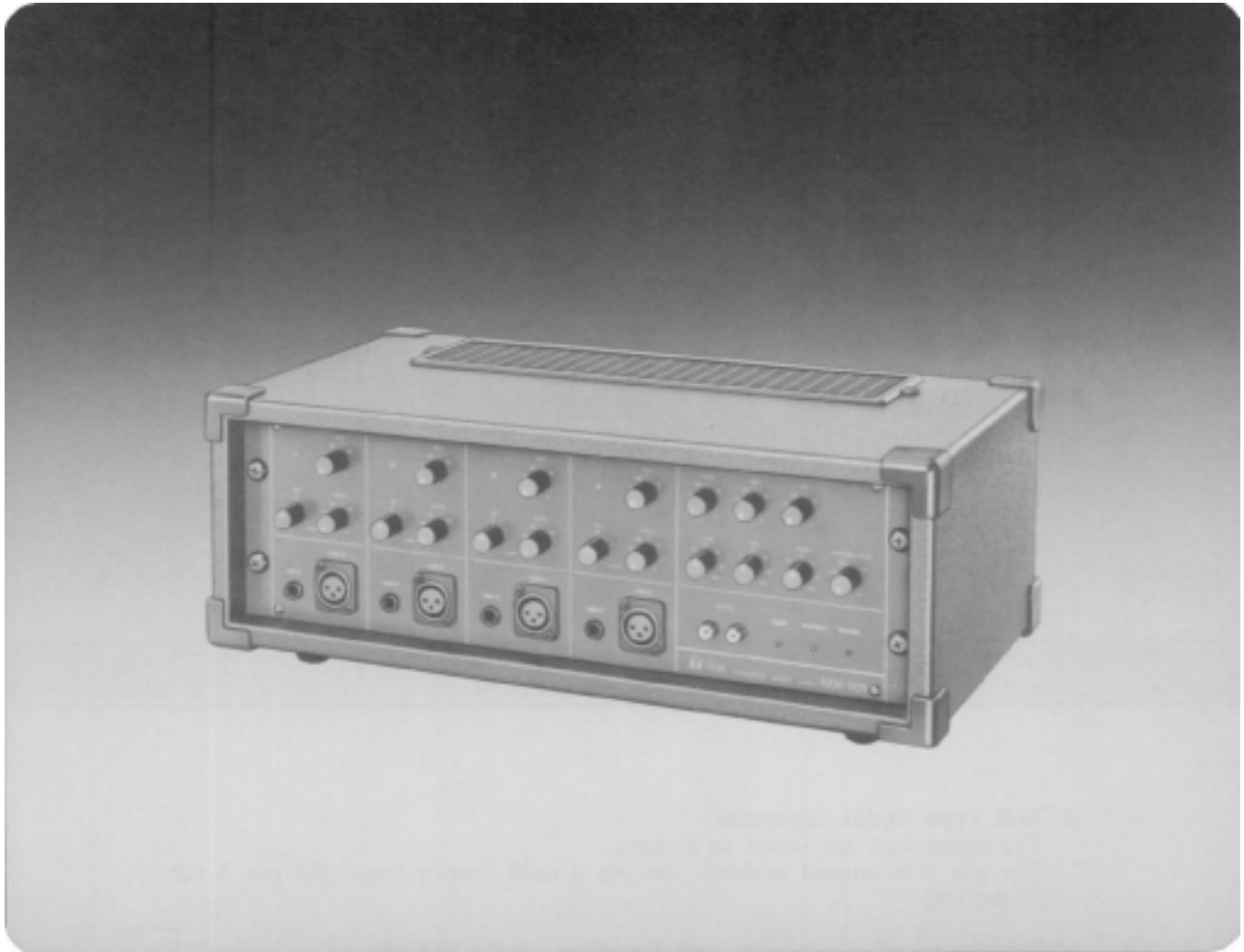


# TOA POWERED MIXER

Model MX-101



---

---

## ● Contents

---

---

Precautions .....	1
General Description .....	2
Features.....	2
Front Panel (Names of components & their usage) .....	3
Rear Panel (Names of components & their usage) .....	4
Connection Examples .....	5
Input Connections .....	6
Block and Level Diagrams .....	7
Specifications.....	8
Characteristics Diagrams .....	9
Appearance.....	9

---

---

## ● Precautions

---

---

### **1. XLR Type Audio Connector**

The connectors are wired as follows.

The pin 1 is ground (shield), the pin 2 cold (low, minus), the pin 3 hot (high,plus).

### **2. Description of components and functions on the MX-101.**

Various descriptions are applied, depending on each manufacturer. In our Operating and Instruction Manual explanation of components and functions is made according to our usage for them.

---

---

## ● General Description

---

---

The TOA MX-101 is a very compact, four channel self-powered mixer. It was designed to deliver maximum features and performance in a cost-effective portable PA package.

The MX-101 features four input channels, one main system output, and one personal monitoring (foldback) output. The internal amplifier is rated at 57 watts RMS into an 8 ohm load, and 75 watts into 4 ohms.

Each input channel has an electronically balanced XLR connector, and a high-impedance unbalanced 1/4" phone jack. In addition, each channel features an EQ control and a post-EQ reverb level control (send).

The master control section features a 3-band equalizer, a high-quality 2 spring reverb, RCA tape inputs, and master volume controls for System level, Foldback, and Reverb return to both.

The power amp features protection circuitry and autocomp compressor, both with indicator LED's.

---

---

## ● Features

---

---

1. Four input channels
2. 57 watts into 8 ohms, 75 watts into 4 ohms
3. 3-band EQ
4. Auto Comp compression unit w/LED
5. Built-in spring reverb
6. Power amp protection circuitry w/LED
7. System output jack
8. Tape input w/level control, RCA jacks
9. Reverb level to System
10. Foldback level control

### **Each Channel**

1. Input level control
2. EQ control
3. Post-EQ Reverb send
4. Low-Z electronically balanced XLR input
5. Hi-Z unbalanced 1/4" input

# ● Front Panel

## Reverb Control (REV)

This control determines the level of signal assigned to the reverb mixing buss. Rotating the control clockwise increase the amount of reverb in that channel.

## Input Level Control (LEVEL)

The level control provides continuously variable adjustment of the channel output to the program mixing buss, thus determining the level of that channel in the main sound system mix. Since the reverb signal is "post" this control, an increase in the level of the channel's output will also result in a corresponding increase in the reverb effect of that channel. The nominal level of the input level control is at the "10" position.

## High Equalizer Control (HIGH)

The high EQ control alters the high frequency response, providing  $\pm 13\text{dB}$  at 5kHz, and  $\pm 15\text{dB}$  at 15kHz of continuously variable active shelving equalization. The "0" detented position provides flat audio response.

## Middle Equalizer Control (MID)

The mid EQ control provided  $\pm 15\text{dB}$  of continuously variable active peaking equalization at 2kHz, and has a flat audio response when set to the "0" detented position.

## Low Equalizer Control (LOW)

The low EQ control provides  $\pm 13\text{dB}$  at 100Hz, and  $\pm 15\text{dB}$  at 50Hz of continuously variable active shelving equalization. The "0" detented position provides flat audio response.

## Tape Level Control (TAPE)

This control sets the overall level of the Tape input signal.

## Reverb Control (REV)

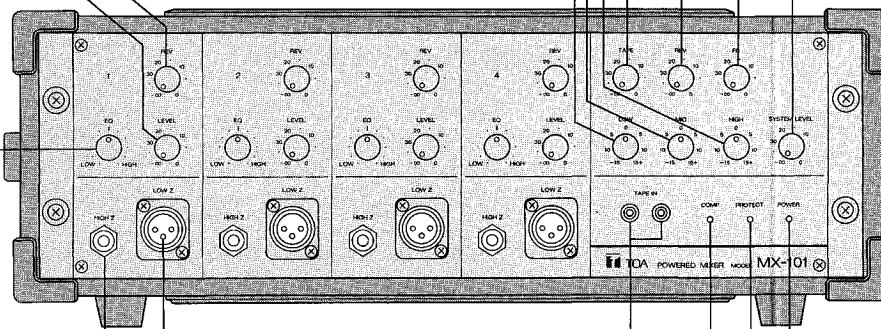
This control adjusts the amount of reverb signal that is returned to the program buss and thus the level of reverb contained in the main sound system.

## Foldback Master Control (FB)

The FB master control adjusts the overall combined signal level of the four independent channel level controls, and thus the level of the entire on-stage monitor mix.

## System Level Control (SYSTEM LEVEL)

The System level (PGM) control adjusts the overall combined signal level of the four independent channel level controls, and thus the level of the main sound system.



## EQ Control (EQ)

Rotating the control clockwise decreases the low frequency signal, and rotating the control counter clockwise decreases the high frequency signal. The center position provides flat audio response.

## High Impedance Connectors (HIGH Z)

These connectors are unbalanced, standard 1/4" phone jacks with an input impedance of 100k ohms, and an input level of -35dB. When a plug is inserted into the high-Z input, the corresponding XLR connector is automatically switched out of the input circuitry.

## Low Impedance Connectors (LOW Z)

The XLR connectors are low impedance, electronically balanced inputs with an input impedance of 1k ohms.

## Tape Input Jacks (TAPE)

These RCA pin jacks are wired in parallel, with an input level of -10dB.

## Power Amp Compression Indicator (COMP)

The comp LED lights when the internal compressor is activated. The compressor is provided to protect speaker systems by compressing the input signal level of the power amplifier when clipping occurs in the output stage. Frequent flashing of the LED is not reason for alarm. However a constant or steady light indicates that the MX-101 is being over-driven and that the internal power amplifier is possibly "under powered" for that application. The output level of the MX-101 should be decreased until the LED only flashes intermittently.

## Power Indicator LED (POWER)

The indicator LED lights when the power switch is "on".

## Power Amp Protection Indicator (PROTECT)

The indicator LED lights if the power amplifier output is shorted, if the temperature of the unit rises above acceptable levels, or if DC is drifted to the speaker output. If the LED should light, speaker wiring and ambient temperature of the MX-101 should be checked. If the LED remains lighted, the unit should be referred to qualified service personnel for repair.

## Note:

The MX-101 protection circuitry will (1) detect 'faulty conditions' within the power amplifier, (2) give a visual indication, and (3) automatically shut down until the fault condition is alleviated. This special circuitry ensures maximum reliability and virtually eliminates equipment damage due to unsafe or fault conditions. Please refer to fault protection table on page 4 for full explanation of this important feature.

## ● Rear Panel

### Speaker Jacks (SPEAKERS)

The speaker outputs are standard 1/4" phone jacks wired in parallel. Speaker cables (recommend at least #18 gauge wire) should be connected between the MX-101 and the speaker systems prior to applying power to the unit.

**Caution** - The MX-101 should never be operated into less than a 4 ohms speaker load.

### Power Switch (POWER)

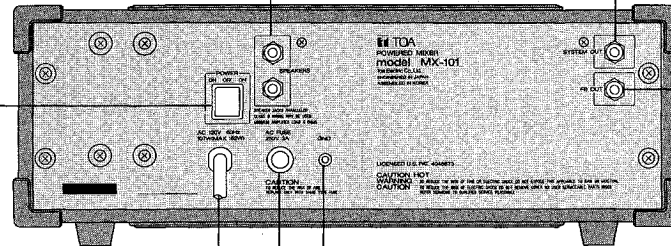
The power switch is a three-position type with the middle position being the "off" position. The MX-101 should be operated in the switch position which produces the lowest amount of system hum.

### System Output Jack (SYSTEM OUT)

The System Out jack is provided for connection to external equalizers and / or power amps. Nominal output level is +4dB with an impedance of 600 ohms.

### Foldback Output Jack (FB OUT)

This jack is for connection to external power amplifiers and / or equalizers for the on-stage monitoring system. Nominal output level is +4dB with an impedance of 600 ohm.



### AC Power Cord

The power cord is the three-wire type with proper grounding facilities.

### Earth Terminal (GND)

### AC Fuse

**Caution** - The ground pin should not be removed under any circumstances. If the MX-101 must be used without proper grounding facilities, a suitable grounding adapter should be utilized.

Operation of the MX-101 with proper grounding techniques will result in less system noise and greatly reduced shock hazard.

### Caution:

To insure maximum cooling of the MX-101, adequate clearance should be maintained between the rear panel and any other surface (4-6 inches should do). The vents on the bottom and top of the MX-101 are also provided for convection cooling. These vents should be kept clear and open. Failure to do so may cause thermal shut-down of the unit.

### Warning

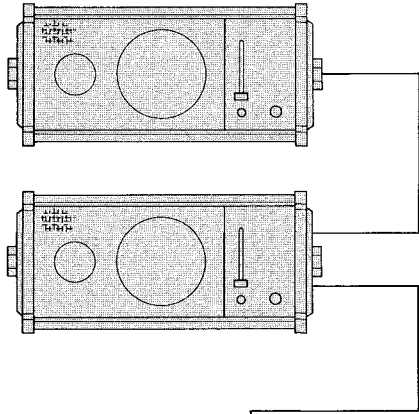
To avoid possible equipment damage and / or personnel injury, the fuse should always be replaced with same type and rating. Using improper fuses will also void the warranty. The MX-101 should always be disconnected from AC outlet prior to changing fuses. If fuses repeatedly fails, the unit should be referred to qualified service personnel for repair.

### Fault Protection Table

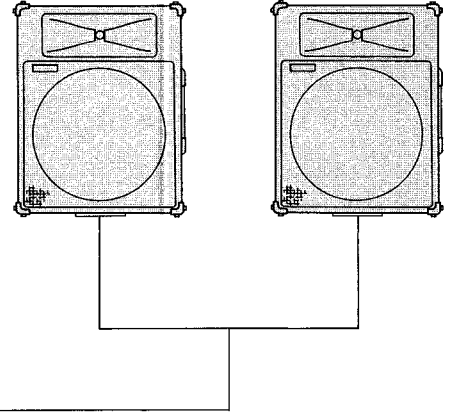
Fault	Protection	Indication	Action	Restoration
Excessive current due to overloads.	Current limiter activates at less than 2 ohm.	Compressor LED illuminates	Remove excessive loads Minimum speaker loads 4 ohm.	Automatic restoration after normal loads are obtained.
Short circuits (less than 0.4-ohm)	Current limiter activates input signal is lowered, unit shuts down.	Amp protection LED illuminates.	Check speaker lines/systems for shorts.	Turn off power switch. Turn on into operational loads.
Temperature rise of heat sink (more than 105°C)	Input signal is lowered. Unit shuts down	Amp protection LED illuminates.	Check for adequate ventilation.	Automatic restoration after temperature lowers (to 75°-95°C)
DC drift	Input signal is lowered. Unit shuts down	Amp protection LED illuminates.	Refer to qualified service personnel	Automatic restoration after normal bias is regained

# ● Connection Examples

**SPEAKER SYSTEM** (Self powered speakers)  
for foldback

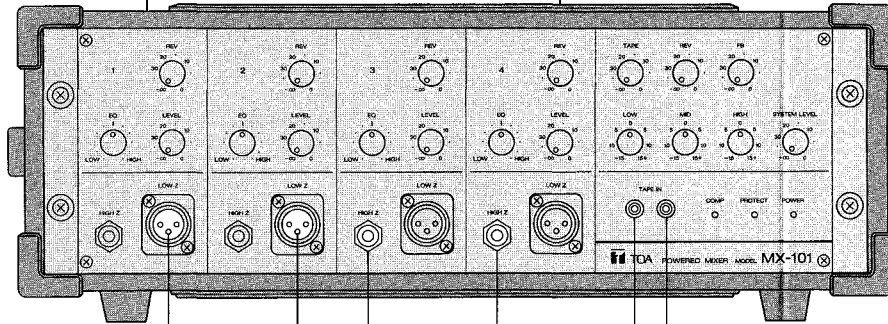


**MAIN SPEAKER SYSTEM**

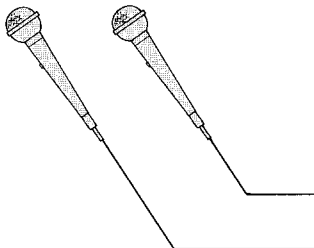


From FB OUT Jack  
on Rear Panel

From Speaker Jack  
on Rear Panel

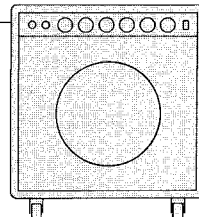


Low Z input should be connected  
with low impedance (50 ohm ~ 600 ohm)  
microphones

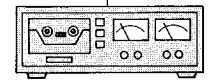


**KEYBOARD**

Line Out



**MUSICAL INSTRUMENT**



**CASSETTE TAPE DECK**  
for playback

## ● Input Connections

Generally speaking, there are two rules to follow when connecting equipment outputs to the inputs of other equipment.

1. Properly match the impedances of the outputs and inputs.
2. Connect low impedance outputs to high impedance inputs.

It goes without saying that not only input and output impedance matching, but also level matching should be taken into consideration. Each input channel of the MX-101 is provided with an Input Level Control that includes a negative feedback (NF) circuitry, so the usable signal level range is wide. Input impedances and levels are shown in the following table.

**INPUT SPECIFICATIONS**

CONNECTION	INPUT	ACTUAL LOAD IMPEDANCE	FOR USE WITH NOMINAL	SENSITIVITY* (PGM OUTPUT LEVEL +4dB)	CONNECTOR
CH1	LOW Z	OPEN	50Ω TO 250Ω MICRO-PHONES	-60dB(0.78mV)	XLR TYPE NC3FPP
CH4	HIGH Z	100kΩ	100kΩ OR LOWER IMP LINES	-35dB(13.8mV)	PHONE JACK
TAPE		50kΩ	50kΩ OR LOWER IMP. LINES	-10dB(245mV)	RCA PIN JACK

\* Sensitivity is the level required to produce a program out level of +4dB.

\*0dB is referenced to 0.775V RMS.

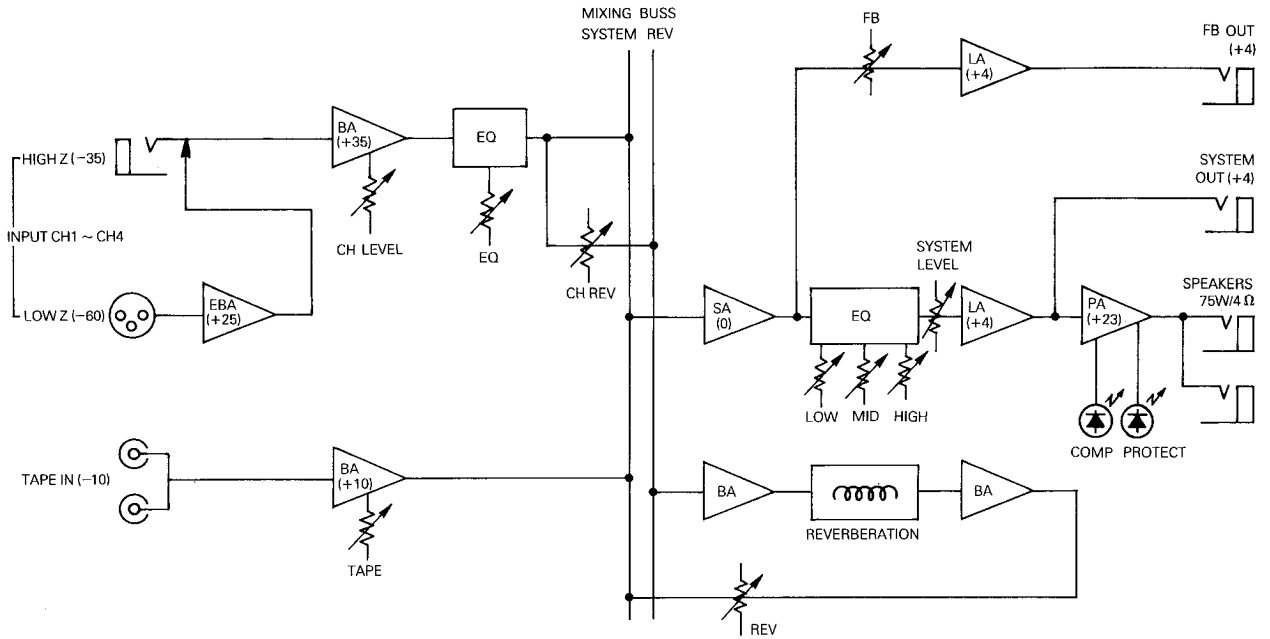
All XLR Type connectors are electronic balanced. Phone jack is unbalanced.

If the line going from one piece of equipment to another is long (more than 5m), we recommend that balanced outputs be connected to balanced inputs.

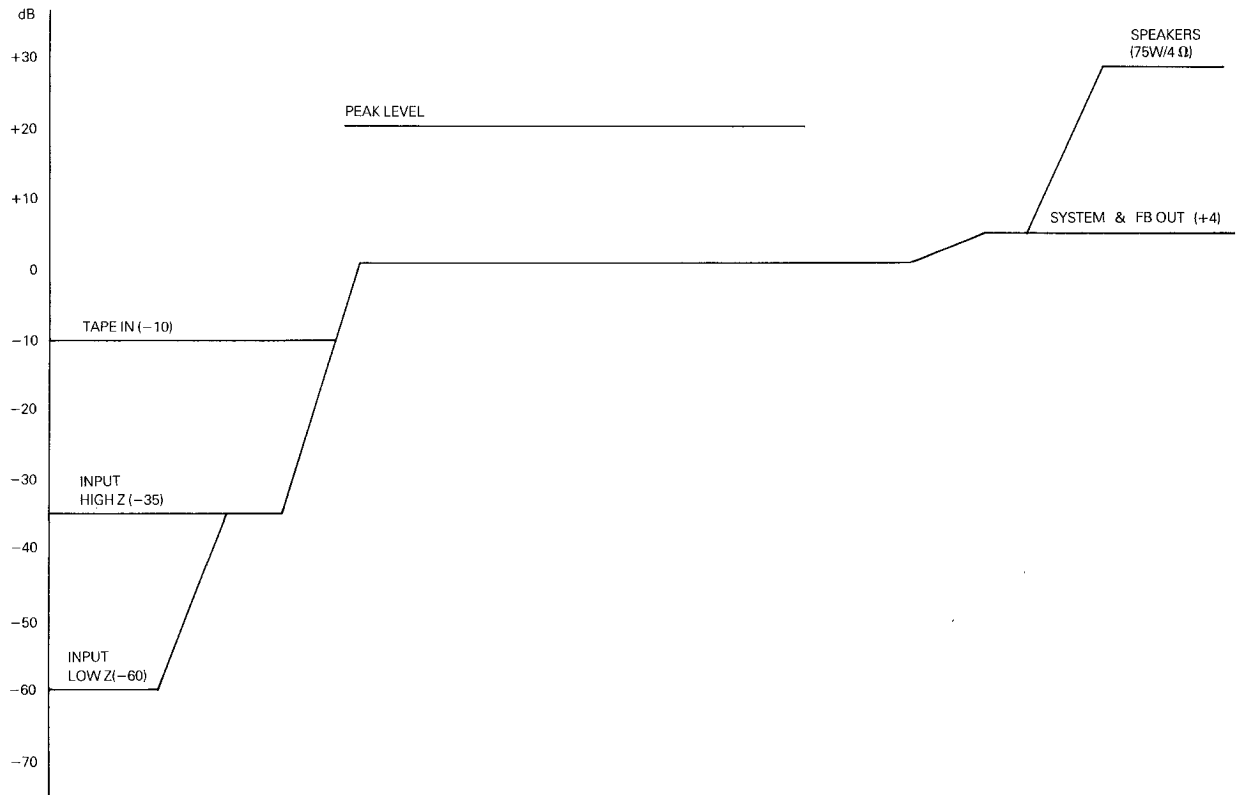
As is described in the beginning of the Operating Instructions Manual, the connectors of the MX-101 are wired as follows: Pin 1 is ground (shield). Pin 2 is cold (low, minus). Pin 3 is hot (high, plus)

# ● Block and Level Diagrams

## BLOCK DIAGRAMS



## LEVEL DIAGRAM





# Specifications

## MIXER SECTION

### Frequency Response

+1, -3dB 30Hz~20kHz (input LEVEL at "5" position)

### Total Harmonic Distortion

0.05% +4dB\* at 1kHz.

### Hum and Noise (Open)

Equivalent Input Noise -132dB\* (20Hz~20kHz)  
 Equivalent Input Noise -134dB\* (IHFA)  
 All level Controls Minimum -105dB\* (IHFA)  
 SYSTEM Master at MAX and all input level controls minimum -87dB\* (IHFA)  
 SYSTEM Master at MAX and one input level control at Max -70dB\* (IHFA)

### Maximum Voltage Gain

INPUT to SYSTEM out 64dB  
 INPUT to FB out 64dB  
 TAPE to SYSTEM out 14dB

### Equalization

50Hz ±15dB Shelving  
 2kHz ±15dB Peaking  
 15kHz ±15dB Shelving

## INPUT SPECIFICATIONS

CONNECTION	INPUT	ACTUAL LOAD IMPEDANCE	FOR USE WITH NOMINAL	SENSITIVITY* (PGM OUTPUT LEVEL +4dB)	CONNECTOR
CH1	LOW Z	OPEN	50Ω TO 250Ω MICRO-PHONES	-60dB(0.78mV)	XLR TYPE
CH4	HIGH Z	100kΩ	100kΩ OR LOWER IMP LINES	-35dB(13.8mV)	PHONE JACK
TAPE		50kΩ	50kΩ OR LOWER IMP LINES	-10dB(245mV)	RCA PIN JACK

## OUTPUT SPECIFICATIONS

CONNECTION	ACTUAL SOURCE IMPEDANCE	FOR USE WITH NOMINAL	OUTPUT LEVEL*		CONNECTOR
			NOMINAL	MAX BEFORE CLIP	
SYSTEM	600Ω	600Ω OR HIGHER IMP LINES	+4dB(1.23V)	+20dB(7.75V)	PHONE JACK
FB	600Ω	600Ω OR HIGHER IMP LINES	+4dB(1.23V)	+20dB(7.75V)	PHONE JACK

## POWER AMPLIFIER SECTION

### Frequency Response

+0 -1dB 15Hz to 30kHz (75 WRMS 4Ω)

### Rated Power & Load

75W RMS (4Ω) 57W RMS (8Ω)

### Power Output at Clipping

1% THD, 1kHz  
 80W RMS (4Ω) 60W RMS (8Ω)

### Total Harmonic Distortion

Less than 0.1% (100mW~75W RMS, 20Hz~20kHz, 4Ω)  
 Typically below 0.05%

### Compressor Dynamic Range

\*Greater than 26dB

### Hum and Noise

At least 100dB S/N ratio, 20Hz~20kHz  
 At least 108dB S/N ratio IHF-A weighted

### Damping Factor

200 (1kHz 8Ω)

### Output Connector

Phone Jack × 2

### Power Requirement

182 W

### Dimensions

460(W) × 171(H) × 248(D) (18.11 × 6.73 × 8.91) ins.

### Weight

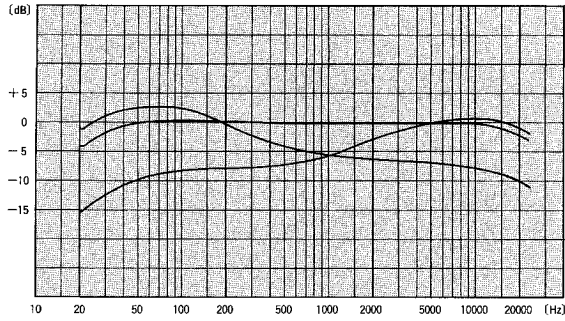
7.5 Kg (16.5 lbs)

\*0dB is referenced to 0.775V RMS.

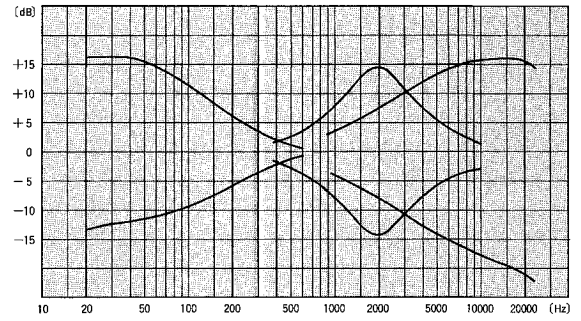
\*Specifications are subject to change without notice.

# Characteristics Diagrams

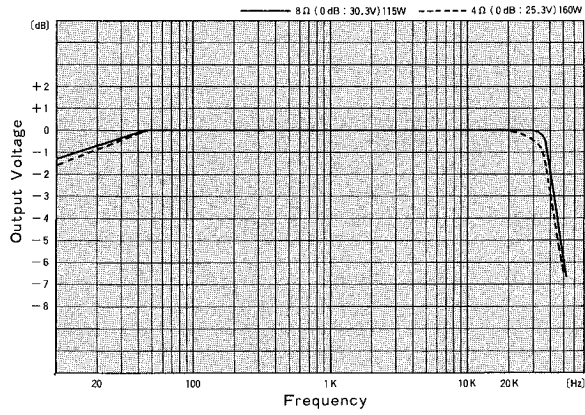
**HIGH Z IN. & INPUT EQ**



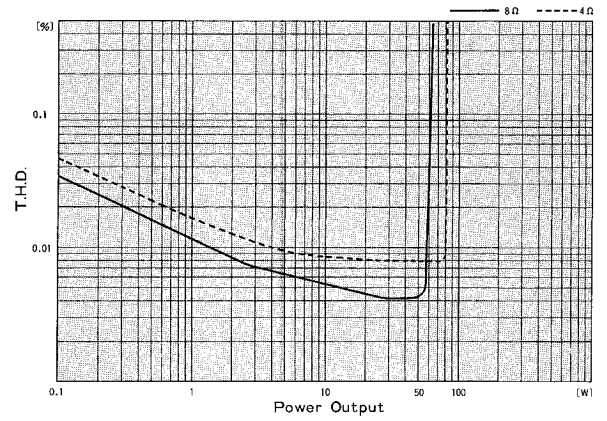
**3 BAND EQ**



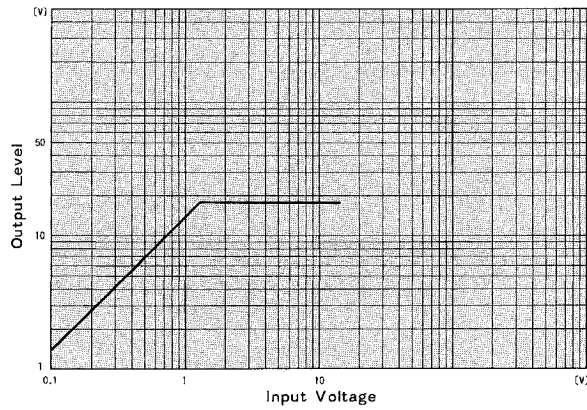
**POWER AMP POWER BAND WIDTH**



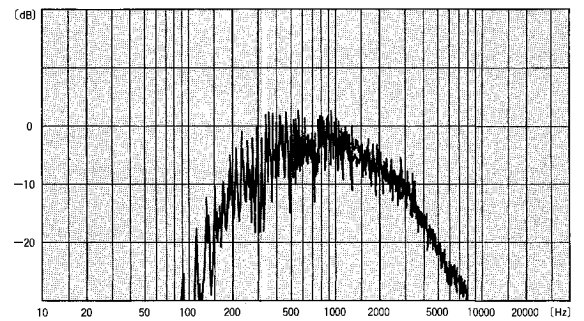
**POWER AMP T.H.D. vs POWER OUTPUT**



**POWER AMP COMPRESSOR**



**REVERBERATION FREQUENCY RESPONSE**



# Appearance

