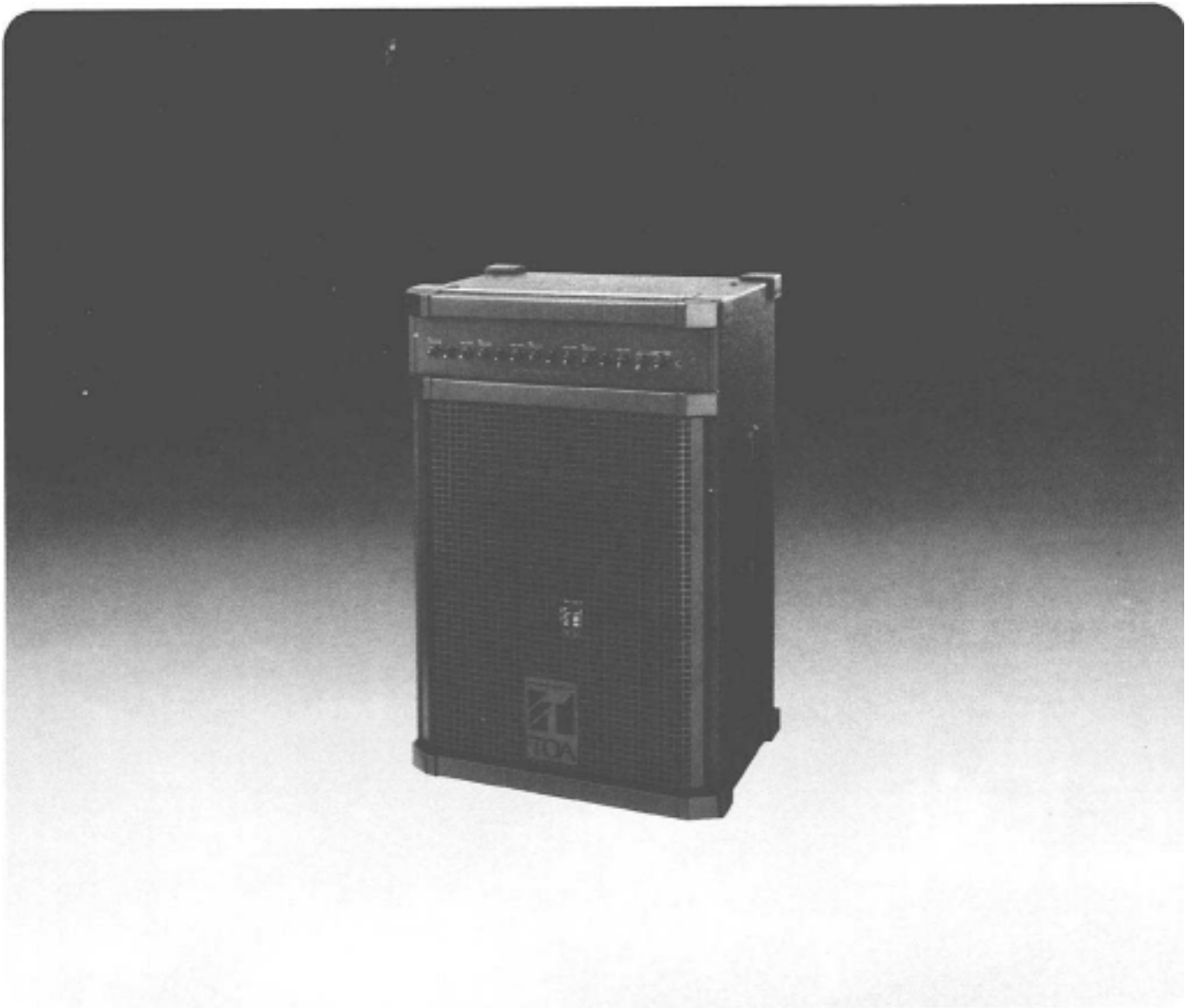


 **TOA ELECTRONIC MUSIC AMPLIFICATION SYSTEM**

Model KD-2



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● Precautions

1. Power Supply

The KD-2 is designed to operate on local AC (50/60Hz) Mains, $\pm 10\%$.

2. 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).

3. Phantom Power Supply

The phantom power switch on channel 1 input permits the user to supply 48V DC through the input connector to a condenser microphone. If phantom power is not required, the switch must be in the "off" position.

4. Description of components and functions of the KD-2

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

● General Description

The TOA KD-2 is a complete electronic music amplification system in a single portable package, consisting of a stereo mixer, spring reverberation unit, power amplifier, and two-way speaker system.

The mixer section provides four discrete input channels. Each input features 2-band active EQ, an independent effects send, a direct output, and a channel level control with concentric stereo pan. Channel 1 features an electronically balanced XLR mic input connector with switchable 48 volt phantom power, for use with condenser-type microphones, and Input channels 1 and 2 feature input sensitivity switches. In addition, channel 4 features an RIAA equalized phono input for direct connection of magnetic cartridge turntables.

The master section contains an effects patching loop with crossfade and level controls, Stereo L & R controls, and a stereo headphone monitoring system.

The 100 watt RMS internal power amplifier features Auto Comp compression circuitry, with an LED indicator, to ensure distortion-free performance and protection for the internal speaker system. The two-way speaker system utilizes a heavy duty 15-inch woofer and a constant directivity horn with piezo electric driver.

The KD-2 is covered in a durable and attractive high tech gray vinyl fabric.

● Features

System Features

- Four input channels
- 100 watts power amplifier output
- Auto Comp compression circuitry w/indicator
- Power amplifier protection circuitry w/indicator
- Built-in heavy-duty two-way loudspeaker system of 15"(38cm) woofer and constant directivity horn with piezo driver
- Built-in spring reverberation unit
- Stereo mixer section

Each Input Channel

- Two band EQ
- Independent effect send is post-EQ/post-fader
- Direct output on each channel, ideal for recording
- Concentric stereo pan and channel volume control
- Input Channel 1 has electronically balanced XLR mic input connector with switchable 48 volt phantom power
- Input Channel 4 has phono (RIAA) inputs for turntable with magnetic cartridge
- Input Channel 3 and 4 has Input Level Selector switches

Master Section

- Level and crossfade control for returning effects signals to stereo mixing busses
- Stereo Left and Right outputs with both RCA and 1/4" jacks
- Headphone monitoring for Stereo Left and Right

● Front Panel

Pan control [PAN]

The pan pot control assigns the fader output signal of each input channel to the Stereo Left and Right mixing busses. At the detented center position, the pan pot routes the signal equally to the L and R mixing busses. Panning from one side to the other gradually assigns the input signal to either the stereo L or R mixing busses exclusively.

Effects Control [EFF]

This control determines the amount of post-fader/post-EQ signal assigned to the effect buss from a given input channel, and thus the level of effects for that channel.

Low Equalizer Control [LOW]

The low EQ control alters the low frequency response of the input channel, providing $\pm 15\text{dB}$ at 20Hz of continuously variable active shelving equalization. The "0" detented position provides flat audio response.

High Equalizer Control [HIGH]

The high EQ control alters the high frequency response of the input channel, providing $\pm 15\text{dB}$ at 20kHz of continuously variable active shelving equalization: The "0" detented position provides flat audio response.

Input Channel Level [LEVEL]

The level control provides continuously variable adjustment of the channel output to the Stereo Left and Right mixing busses, thus determining the level of that channel in the main sound system mix. The nominal level of the input level control is at the "0" dB position.

Cross-fade Control for Reverb/Effect [REV/EFF X-FADE]

When this control is in the center position, the REV RET and EFF RET signals are equally assigned to the stereo mixing buss. Rotating the control counter-clockwise decreases the EFF RET signal level, keeping the original level of the REV RET signal. Rotating the control clockwise decreases the REV RET signal level, keeping the original level of the EFF RET signal.

Level Control for Reverb/Effect [REV/EFF LEVEL]

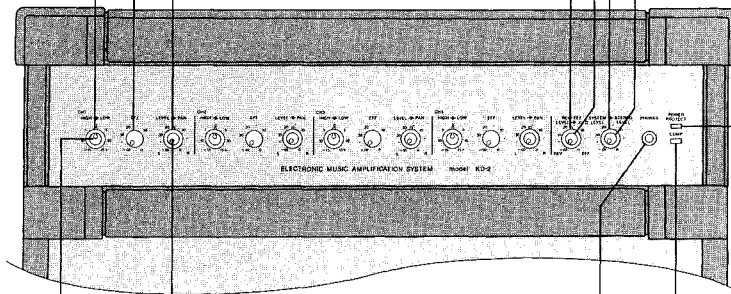
This control governs the amount of reverb signal (built-in or outboard) through the reverb return jack (REV RET), and effect signal returned through the effect return jack (EFF RET) to the system mixing buss. The signals of REV RET and EFF RET are controlled simultaneously.

Stereo Level Control [STEREO LEVEL]

These concentric controls determine the overall level of the Stereo L & R output (STEREO OUT L and R).

System Level Control [SYSTEM LEVEL]

This control determines the overall level of the KD-2 system.



Headphone Jack [PHONES]

The headphone jack will accept any stereo headphone with 8 ohms impedance, or higher. This jack provides the same signal as the Stereo output L and R.

Power/Protect LED Indicator [POWER/PROTECT]

The LED indicator lights red and remains lit for 3 seconds after the power switch has been turned on, and then turns to green when the KD-2 is powered up. The LED lights red when the protection circuit is activated.

Power Amp Compression Indicator [COMP]

The Comp LED lights when the internal compressor is activated. The compressor is provided to protect the speaker system 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 KD-2 is being overdriven and that the internal power amplifier is possibly "under powered" for that application. The output level of the KD-2 should be decreased until the LED only flashes intermittently.

Stereo L & R Output Jack [STEREO OUT L/R]

The unbalanced RCA pin jacks and 1/4" phone jacks are wired in parallel. The RCA pin jack has a nominal output level of -10dB and an impedance of 1k ohms, and the 1/4" phone jack has a nominal output level of +4dB and an impedance of 1 k ohms. All jacks may be used simultaneously.

Sum Output Jack [SUM OUT]

The Sum Output jack has a nominal output level of +4dB and an impedance of 1 k ohms. The Sum Output is the same signal as the Speaker output.

Sum Input Jack [SUM IN]

This 1/4" phone jack is directly connected to the mono Sum (System) buss. Its nominal input level is -10dB, with an input impedance of 10k ohms.

Effect Send Jack [EFF SEND]

This 1/4" phone jack is used in conjunction with the Effect Return jack to connect an outboard effects device (i.e., delay or reverb) to the KD-2. The Effect Send jack should be connected to the input of the Effect. Nominal output level is -10dB with an impedance of 1k ohms.

Effect Return Jack [EFF RET]

This 1/4" phone jack is used in conjunction with the Effect Send jack to connect an outboard effects device (i.e., delay or reverb) to the KD-2. The Effect Return jack should be connected to the output of the effect. Nominal input level is -20dB with an impedance of 10k ohms.

Reverb Return Jack [REV RET]

This 1/4" phone jack is used in conjunction with the Effect Send jack to connect an outboard effect device (i.e., delay or reverb) to the KD-2. The Reverb Return jack should be connected to the output of the effect device. Nominal input level is -20dB with an impedance of 10k ohms. When a plug is inserted into this jack, the built-in reverb circuitry is automatically cut off.

Earth Terminal

This terminal can be used to ground other devices such as tape decks and turntable to the KD-2 to reduce hum and shock hazard. And may be used to provide ground connection for tape decks or turntables.

Input Level/Source Selector [PAD]

The slide switch provides 30dB attenuation for the 1/4" Input Jack, and RCA pin Input Jack at the "30" position. The correct setting should be made according to the output level of the equipment connected. For example, an instrument with a "HOT" output may overload the input circuitry, resulting in a distorted or "FUZZY" sound. When using the RCA Phono Input, select the "PHONO" position of this switch.

RCA Phono (RIAA) Input [PHONO]

These RCA pin jacks have a nominal level of -55dB and an impedance of 50k ohms, and include RIAA phono equalization.

Input Level Selector [PAD]

The slide switch provides 30dB attenuation for the 1/4" Input Jack, and RCA pin Input Jack at the "30" position. The correct setting should be made according to the output level of the equipment connected. For example, an instrument with a "HOT" output may overload the input circuitry, resulting in a distorted or "FUZZY" sound.

1/4" Phone Channel Input [INPUT]

These connectors are unbalanced, 1/4" phone jack with an input impedance of 100k ohms and an input level of -30dB. When a plug is inserted into the 1/4" input jack, the corresponding XLR microphone input or RCA pin channel input is automatically switched out of the input circuitry.

RCA Channel Input [INPUT]

The RCA pin input jack is unbalanced, with a nominal level of -30dB and an impedance of 100k ohms.

Direct Output [DIRECT OUT]

The Direct Output on each channel utilizes an unbalanced RCA pin jack with an impedance of 1k ohms and a level of -10dB. The Direct Output is post-EQ/post-fader, and is useful for recording or for sending individual instruments to other equipment.

Phantom Power On/Off switch [PHANTOM]

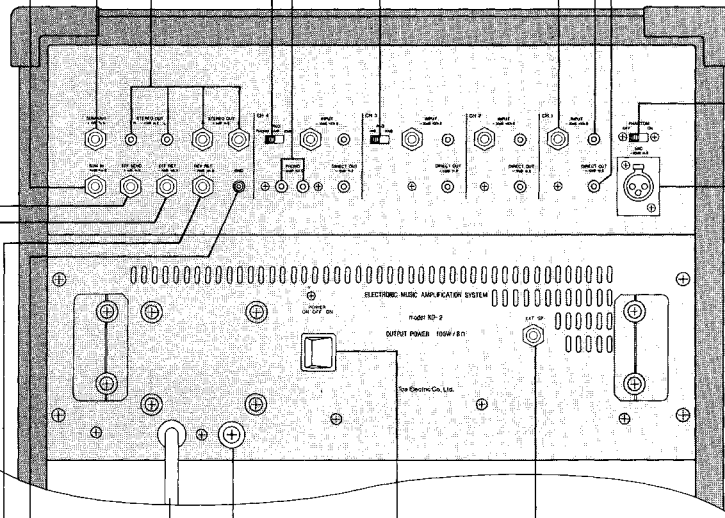
This switch alternately turns "on" and "off" the phantom power (48V DC) for the XLR connector assigned to Channel 1. The switch should remain in the off position when a condenser type mic is not in use.

Balanced XLR Microphone Input [MIC]

The XLR-type microphone input connector (Channel 1 only) is electronically balanced with a nominal level of -60dB and an input impedance of 1k ohms. Phantom powering is provided for use with condenser-type microphones (see PHANTOM). The microphone input is automatically disconnected when either the corresponding RCA Pin jack or the 1/4" phone jack is used.

Speaker Jack [EXT. SP]

The external speaker output is a standard 1/4" phone jack. Speaker cables (recommend at least #18 gauge wire) should be connected between the KD-2 and external speaker systems prior to applying power to the unit. When a plug is inserted into the external speaker jack, the internal speaker is automatically switched off. Caution — The KD-2 should never be operated into less than an 8-ohm speaker load.



AC Power Cord

The power cord is of the three-wire type with proper grounding facilities built-in. (6ft.) Caution — The ground pin should not be removed under any circumstances. If the KD-2 must be used without proper grounding facilities, a suitable grounding adapter should be utilized. Operation of the KD-2 with proper grounding techniques will result in less system noise and greatly reduced shock hazard.

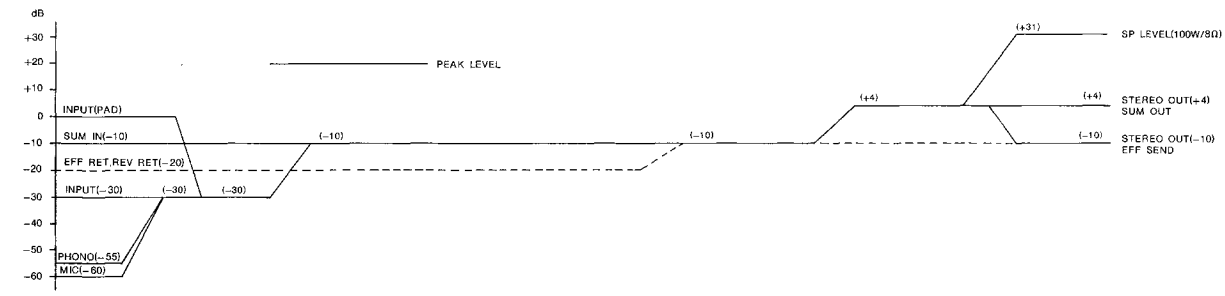
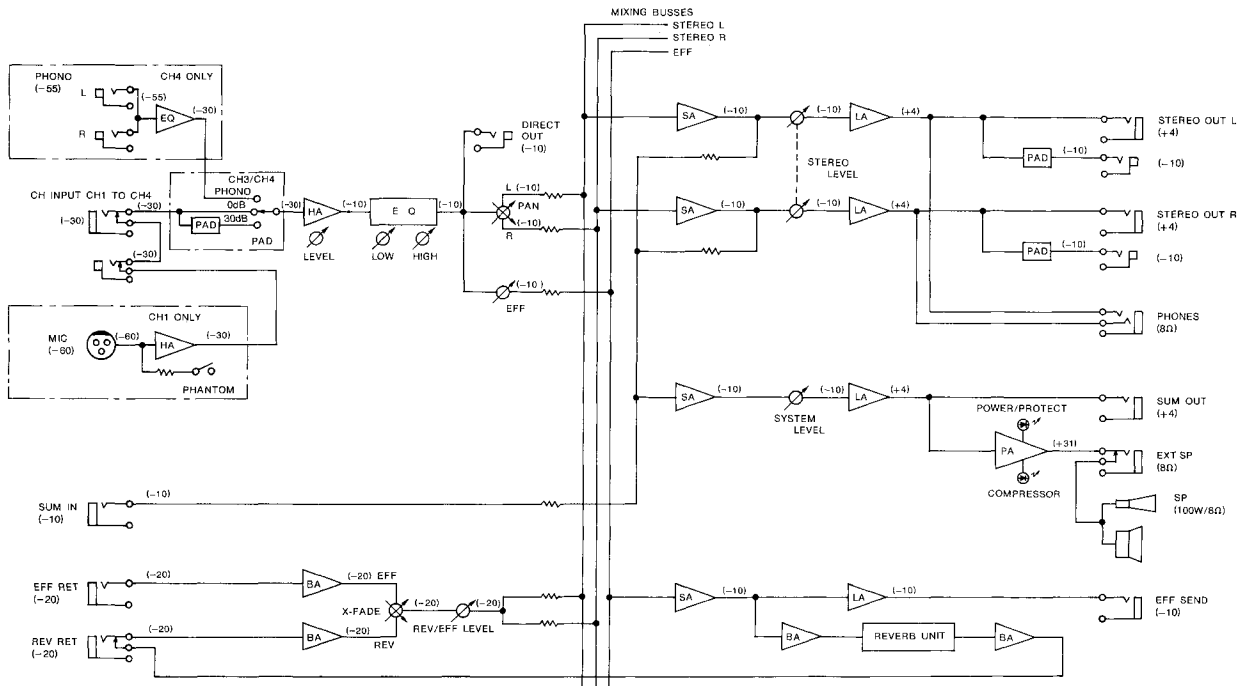
Power Switch [POWER]

The power switch is a three-position type with the middle position being the "off" position. The KD-2 should be operated in the switch position which produces the lowest amount of system hum.

AC Fuse

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 KD-2 should always be disconnected from AC outlet prior to changing fuses. If fuse repeatedly fails, the unit should be referred to qualified service personnel for repair.

Block and Level Diagrams



Specifications

MIXER SECTION

Frequency Response

+0, -3dB 20Hz to 20kHz (INPUT to STEREO OUT)

Total Harmonic Distortion

Less Than 0.03% +4dB* 1kHz (STEREO OUT)

Hum and Noise (STEREO OUT: Open 20Hz to 20kHz)

All Level Control Minimum -85dB
One INPUT Level Control Maximum -68dB

Equalization

LOW ±15dB 20Hz Shelving
HIGH ±15dB 20kHz Shelving

POWER AMPLIFIER SECTION

Power Output

100 watts minimum sine wave continuous average power output monaural driving 8-ohm over a power band from 20Hz to 15kHz. The maximum Total Harmonic Distortion (THD) at any power level from 250 milliwatts to 100 watts shall be no more than 0.3%. 100 watts continuous average sine wave power into 8-ohm will less than 0.02% THD at 1kHz.

Frequency Response

+0dB, -1dB 20Hz to 20kHz

Total Harmonic Distortion

Less than 0.02% at 100 watts into 8-ohm at 1kHz

Hum and Noise

-70dB below rated output (IHF-A weighted)

SPEAKER SECTION

Speaker

15"(38cm) woofer, CD horn and piezo driver

Sensitivity

97dB (1 watt 1 meter)

Frequency Response

70Hz to 20kHz

GENERAL SPECIFICATIONS

Power Consumption

200 watts maximum

Dimensions (W×H×D)

490mm×719mm×341mm
19¼"×28¼"×13⅜"

Weight

26kg (57.3 lbs)

● Specifications

INPUT SPECIFICATIONS

Input	Actual Load Impedance	For Use With Nominal	Input Level		Connector
			Nominal	MAX. Before Clip	
CHANNEL INPUT CH1~CH4	100kΩ	100kΩ OR LOWER IMP LINES	-30dB (24mV)	0dB (0.775V)	PHONE JACK RCA PIN JACK
MIC CH1	1kΩ	50Ω TO 250Ω MICROPHONES	-60dB (0.78mV)	-30dB (24mV)	XLR-3-31 TYPE
PHONO CH4	50kΩ	MAGNETIC CARTRIDGE	-55dB (1.4mV)	-25dB (44mV)	RCA PIN JACK
EFF RET	10kΩ	10kΩ OR LOWER IMP LINES	-20dB (78mV)	+10dB (2.45V)	PHONE JACK
REV RET	10kΩ	10kΩ OR LOWER IMP LINES	-20dB (78mV)	+10dB (2.45V)	PHONE JACK
SUM IN	10kΩ	10kΩ OR LOWER IMP LINES	-10dB (245mV)	+20dB (7.75V)	PHONE JACK

0dB is referenced to 0.775V RMS.

OUTPUT SPECIFICATIONS

Output	Actual Source Impedance	For Use With Nominal	Output Level		Connector
			Nominal	MAX. Before Clip	
STEREO OUT (L, R)	1kΩ	1kΩ OR HIGHER IMP LINES	+4dB (1.23V)	+20dB (7.75V)	PHONE JACK
			-10dB (245mV)	+6dB (1.5V)	RCA PIN JACK
SUM OUT	1kΩ	1kΩ OR HIGHER IMP LINES	+4dB (1.23V)	+20dB (7.75V)	PHONE JACK
EFF SEND	1kΩ	1kΩ OR HIGHER IMP LINES	-10dB (245mV)	+20dB (7.75V)	PHONE JACK
PHONES	100Ω	8Ω OR HIGHER	+4dB (1.23V)	+20dB (7.75V)	STEREO PHONE JACK
DIRECT OUT	1kΩ	1kΩ OR HIGHER IMP LINES	-10dB (245mV)	+20dB (7.75V)	RCA PIN JACK
EXT. SP	—	8Ω	100W/8Ω	—	PHONE JACK

Stereo phone jacks is wired:

Tip=Left, Ring=Right, Sleeve=Common.

The XLR type connector is electronically balanced.

The XLR type connector is wired as follows

Pin No.1-Ground

Pin No.2-Cold (Low)

Pin No.3-Hot (High)

0dB is referenced to 0.775V RMS.

Specifications are subject to change without notice.

● Appearance

