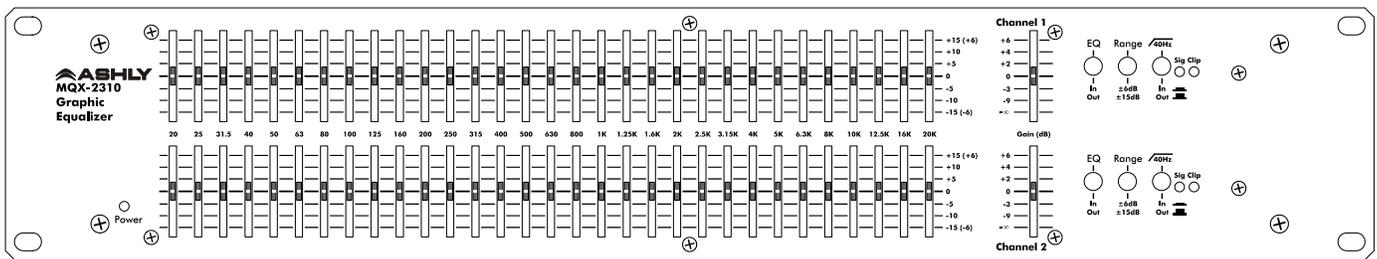




## MQX-2310 Graphic Equalizer

### Operating Manual



### Ashly Audio Inc.

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[www.ashly.com](http://www.ashly.com)

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## Important Safety Instructions Consignes de sécurité à lire attentivement



*The lightning flash with arrowhead symbol, within an equilateral triangle, 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. The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the device*

*Le symbole de la fêche dans un triangle équilatéral symbolisant la foudre est prévu pour sensibiliser l'utilisateur à la présence de tension de voltage non isolée à l'intérieur de l'appareil. Elle pourrait constituer un danger de risque de décharge électrique pour les utilisateurs. Le point d'exclamation dans le triangle équilatérale alerte l'utilisateur de la présence de consignes qu'il doit d'abord consulter avant d'utiliser l'appareil.*

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
6. Do not use this apparatus near water.
7. Clean only with dry cloth.
8. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
9. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
10. 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.
11. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
12. Only use attachments/accessories specified by the manufacturer.
13. 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.
14. Unplug this apparatus during lightning storms or when unused for long periods of time.
15. 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.

1. Lisez ces instructions.
2. Conservez ces instructions.
3. Observez les avertissements.
4. Suivez ces instructions.
5. Pour réduire le risque de feu ou la décharge électrique, ne pas exposer cet appareil pour pleuvoir ou l'humidité.
6. Ne pas utiliser l'appareil près de l'eau.
7. Le nettoyer à l'aide d'un tissu sec.
8. Ne pas bloquer les ouvertures de ventilation, installer selon les consignes du fabricant.
9. Eloigner des sources de chaleur tel: radiateurs, fourneaux ou autres appareils qui produisent de la chaleur.
10. Ne pas modifier ou amputer le système de la mise à terre. Une prise avec mise à terre comprend deux lames dont une plus large ainsi qu'une mise à terre: ne pas la couper ou la modifier. Si la prise murale n'accepte pas la fiche, consulter un électricien pour qu'il remplace la prise désuète.
11. Protéger le cordon de secteur contre tous bris ou pincement qui pourraient l'endommager, soit à la fiche murale ou à l'appareil.
12. N'employer que les accessoires recommandés par le fabricant.
13. N'utiliser qu'avec les systèmes de fixation, chariots, trépied ou autres, approuvés par le fabricant ou vendus avec l'appareil.
14. Débrancher l'appareil lors des orages électriques ou si inutilisé pendant une longue période de temps.
15. Un entretien effectué par un centre de service accrédité est exigé si l'appareil a été endommagé de quelque façon: si il a été exposé à la pluie, l'humidité ou s'il ne fonctionne pas normalement ou qu'il a été échappé.

## FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in both a commercial and residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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This manual uses a *Perpetual Table Of Contents*. Each page has a copy of the manual's contents in a gray box just like this one. The section you are in will always be bold with the other sections "grayed out." The feature allows you to jump directly to another section without having to return to a Table Of Contents page.

## Introduction

Congratulations on your purchase of an Ashly MQX Equalizer. MQX equalizers offer a wide range of professional features including:

- Silent In/Out Switching
- Signal Present and Clip LEDs
- Precision Wein Bridge Filters
- 25mm Faders with Center-Off Detent
- Constant "Q" Design
- Switchable Low Cut Filter
- Selectable 15dB or 6dB Range
- Worldwide Power Supply
- Balanced XLR, ¼", and Euroblock Inputs
- Servo-Balanced XLR, ¼", and Euroblock Outputs

We are confident that you will be pleased with the high performance, superb sound quality, and reliability that Ashly is known for.

### About Ashly

Ashly Audio was founded in 1974 by a group of recording engineers, sound professionals, and electronics designers. The first products were custom consoles for friends and associates, but business quickly grew. The philosophy established from the very beginning holds true today: to offer only the highest quality audio tools at an affordable cost to the professional user – ensuring reliability and long life. Many years later, Ashly remains committed to these principles.

### Safety

**In order to minimize the risk of injury, damage, or hearing loss, please read the entire owner's manual before connecting to a sound system.**



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- ✦ TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE.
- ✦ REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
- ✦ TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
- ✦ TO REDUCE THE RISK OF FIRE, REPLACE ONLY WITH SAME TYPE FUSE. REFER REPLACEMENT TO QUALIFIED SERVICE PERSONNEL.
- ✦ **WARNING: THIS APPARATUS MUST BE GROUNDED THROUGH THE SUPPLIED POWER LINE CORD**

## MQX Equalizers

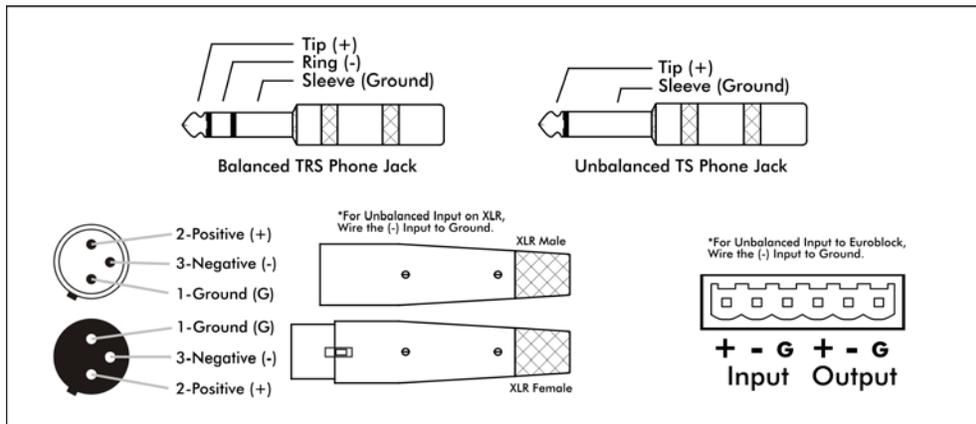
MQX equalizers use “Q” enhanced Wein bridge filters and interleaved summing for constant “Q”, low ripple, and minimum filter interaction. A servo-balanced output stage simulates a true transformer output to allow interfacing with virtually any type of load.

## Connectors & Cables

Your MQX series equalizer is provided with three different connector types:

1. 1/4 inch stereo phone jacks (TRS)
2. Three pin XLR type connectors
3. Euroblock screw terminal connectors

These connectors will allow interfacing to most professional audio products. Inputs as well as servo-balanced outputs can be used balanced or unbalanced. When possible, balanced connections are recommend between all components in your system, as this eliminates ground-loop induced hum and noise.



## Unbalanced Connections and Grounding

If you must use unbalanced connectors, the negative lead of the connector should be tied to the ground lead. Using unbalanced connections could result in chassis ground-loop noise. Altering the signal/chassis ground relationship in equipment connected to your MQX unit may eliminate the noise.

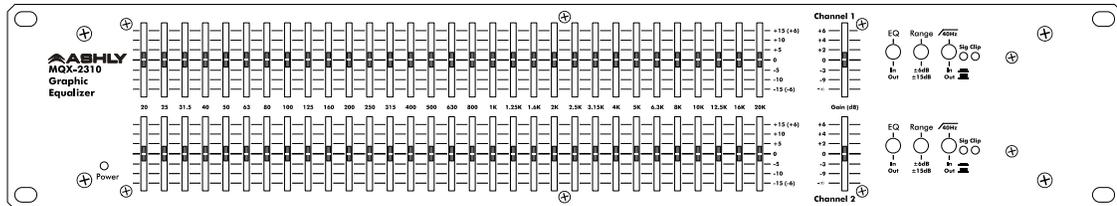
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## Physical Description

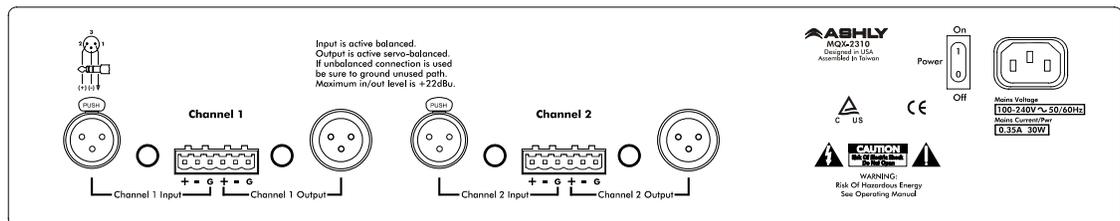
The MQX-2310 is 2RU, and weighs 11 pounds.

### MQX-2310 Front Panel



1. **Power LED** – Displays power on or off.
2. **Equalization** - The individual equalization faders adjust the gain or loss at each filter frequency. There are 31 of these faders per channel on the MQX-2310. By adjusting a combination of faders, an overall frequency response can be developed and the physical position of the faders will give an approximate visual indication of this response.
3. **Gain** - The gain control adjusts the overall gain of the equalizer when the EQ switch is “in”. It is generally used to compensate for level changes due to the equalization process, but can also adjust overall system level and gain structure. Overall gain with this control is from +6dB to  $-\infty$ .
4. **Signal Present LED** – A green LED indicates when input signal to the equalizer is above  $-20$ dBu. EQ or Gain settings have no effect on this indicator, as it only tells you the level of signal applied to the equalizer.
5. **Clip Indicator LED** – The red Clip LED turns on when any signal within the audio path exceeds +19dBu. Clipping can be detected at the input stage, gain stage, or equalizer output.
6. **Range Switch** - This switch selects the operating range of the individual equalization faders between 15dB and 6dB. The 15dB settings should be used when this much equalization is needed. The 6dB setting allows finer resolution on the fader settings.
7. **EQ In/Out Switch** - This switches the Graphic Equalization and gain adjustments, allowing the effect of any equalization to be compared to a “flat” response. This switch does not defeat the High-pass filter.
8. **High-Pass Filter** - The high-pass filter can be used to supplement the frequency response achieved by the bandpass filters. Its function is to “roll off” the response below a given frequency eliminating subsonic interference like wind noise or floor rumble. The high-pass frequency is fixed at 40Hz with an 18dB/Oct slope.

### MQX-2310 Rear Panel



1. **Power** – Switches the unit power on or off
2. **Inputs** - For unbalanced inputs, the signal should be on the + connection and the - connection tied to ground. A mono 1/4” plug used as an unbalanced connection will automatically be grounded. When using a stereo plug, XLR connector, or euroblock for an unbalanced signal, the (-) input connection **MUST** be tied to ground.
3. **Ashly Servo-Balanced Output** - This output circuit is an active output which maintains a constant output level between the (+) and (-) output terminals, regardless of either terminal being connected to ground. This servo-balanced output provides an unchanged signal without regard to ground.

## Installation

Use four screws and washers when rack mounting the Equalizer. For mobile use, the unit should be further secured as appropriate.

### General Requirements

MQX Equalizers have specific physical, electrical and signal requirements for proper operation. These requirements will vary depending on your specific application, setup, and the settings on the Equalizer. When setting up and testing your system, please take special care to double check all connections and settings. Please refer to the specifications section of this manual for specific input, output and other figures.

### AC Power

Your MQX equalizer should be connected to a standard 3-wire grounded electrical outlet supplying 100-240 Volts, 50-60 Hz. To reduce the risk of ground loop hum, connect all audio equipment to the same electrical power source. Do not remove the AC plug ground pin, as a potential shock hazard could result.

This unit will perform normally within the AC voltage range specified above. Voltages less than this, as found in “brown-out” conditions, may reduce performance. No user serviceable parts are inside the chassis. Refer all servicing to qualified service personnel. Overall power consumption is less than 30 watts.

**NOTE:** The power switch does NOT isolate the appliance from mains. Make sure the mains power socket or an alternative disconnect device is near by and easily accessible. When the product is connected to mains, the line-filter and the input of the fuse are energized.

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## Typical Applications

The following information will help you make the most of your new equalizer:

### General Tone Control

The graphic equalizer is a very useful device for general tone shaping because it is intuitive and easy to adjust. The visual reference provided by the slider position gives an approximate idea of the frequency response generated, with the lower frequencies on the left and higher frequencies on the right. To use the power of an equalizer effectively, you need to translate your idea of the tone you want to produce into a range of numerical frequencies. This is simple after a little practice. Here are a few references which are useful for starting points:

- Very low bass (the “wind” in a kick drum, almost felt as much as heard -40Hz-80Hz.
- The low register of a male voice - 200Hz
- The low register of a female voice - 350Hz
- Lower midrange (“warmth” frequencies) - 400Hz-1KHz
- Upper midrange (“harshness”, snare drum “bite”, “hot” sound) -2.5KHz-4KHz.
- Sibilance (“sss” sounds, cymbal “sizzle”) - 8KHz-15KHz.

Try using these starting points as a guide when you want more or less of these types of sounds. Adjust by ear from there. It is always a good idea to remember that a little equalization usually works out much better than a lot, and that there are many audio problems which can not be solved with equalization alone.

### Feedback Control

A graphic equalizer can be used to provide some control over moderate feedback problems, but does not have enough flexibility or resolution to handle severe situations. You will achieve the best results when you can eliminate one or two feedback points by setting one or two sliders for no more than a 6dB cut. Often you can find a feedback point by boosting sliders in succession to determine which frequency ranges contain the feedback modes, and then cutting those ranges. Be very careful in this process to avoid explosive feedback and possible system and hearing damage. If you find feedback points with many equalizer bands, cutting every band may not help (all you will do is reduce system gain). The combination of a graphic equalizer for tone control and a parametric equalizer for feedback control is highly recommended.

### Console Channel Equalization

Many mixing consoles provide only simple equalization for individual channels. If your console has channel inserts, you can patch your graphic equalizer into a channel requiring more precise equalization.

### Large Room Equalization

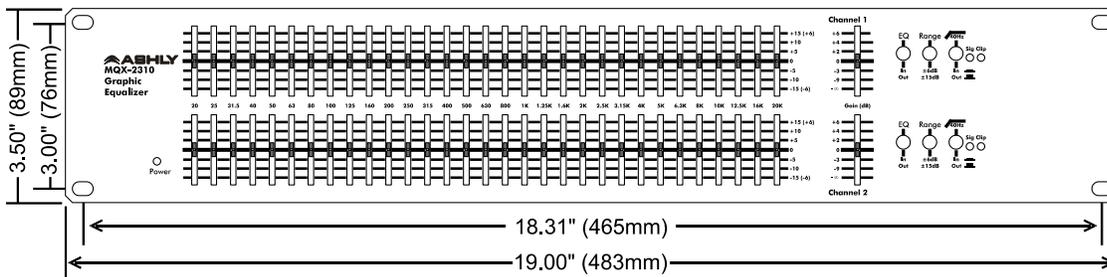
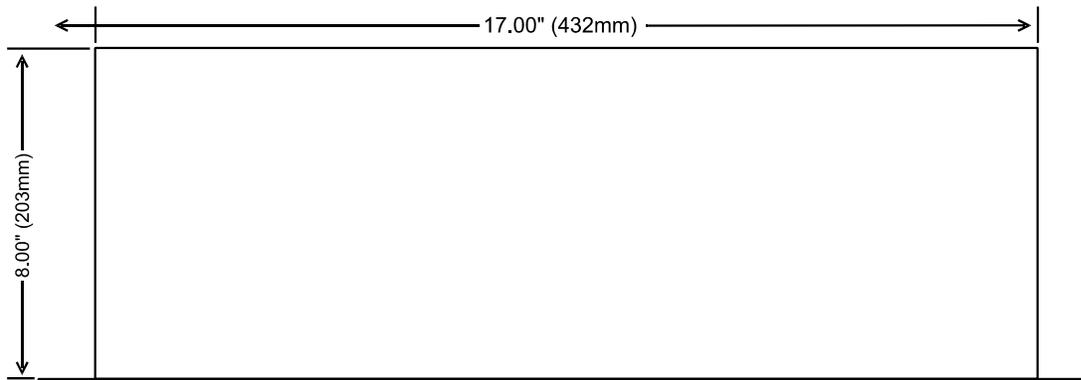
Large rooms tend to suffer from multiple reflections with long time delays, long reverberation times, and “ringmodes”, all of which lead to reduced intelligibility and a generally “muddy” sound. As sound travels long distances through the air, high frequencies are attenuated more than low frequencies. In general, large rooms benefit from some low frequency roll-off, high frequency boost, and attenuation of ring mode frequencies. As in the case of feedback control, a graphic equalizer can help reduce an isolated ring-mode or two, but a tunable narrow-band equalizer such as a parametric is more effective here.

## Troubleshooting

Situation	Action
No Audio Output	Check AC power - is the power LED on? Check in/out connections - are they reversed? Are you sure you have an input signal?
EQ Controls Do Nothing	Is the master EQ switch in? The lowest and highest frequency sliders may be beyond the range of the program material or speakers and may produce little or no audible effect.
Peak Light Flashes or Stays On All the Time	If the peak light flashes, the signal level to the equalizer is too high. Turn down the gain and/or reduce input level to the equalizer. If it is on all the time, disconnect the input and output cables. If it is still on, the unit must be returned for service.
Distorted Sound	This will only be caused by too much signal which will show on the Clip LED. If the LED is not flashing, there is an overload somewhere else in the signal path. Adjust the relative gain of each component in your chain to keep everything at a comfortable level.
Excessive Hum or Noise	Hum will usually be caused by a ground loop between components. Try using the suggested balanced input and output hook-ups if the other pieces of equipment used in conjunction with your equalizer have balanced inputs and outputs. Noise (excessive hiss) can be caused by insufficient drive signal. Make sure you are sending a nominal 0 dBu line level signal to the equalizer. Most noise problems occur because gain is applied to audio signals too late in the chain. For best performance, apply gain to individual source signals as early as possible, like at the mixer input section. As gain increases, it also boosts the noise content of that signal. Any cumulative noise built up in a mixed signal will only be increased by using an equalizer as a gain device, so make every attempt to operate the equalizer with as little gain as possible.

Note: Unshielded cables, improperly wired connections, and cable with broken strands (shorts, etc.) are the most common problems. Make sure you use good quality cable with connectors soldered firmly on the correct pin. When in doubt, get in touch with your Ashly dealer.

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## Specifications

<i>Specification</i>	<i>MQX-2310</i>
Type	Active Balanced
Impedance	20K $\Omega$
Max Level	+23dBu
Connectors	1/4" Phone Jack (TRS), XLR, Euroblock
<b>Output</b>	
Type	Servo-Balanced
Source Impedance	100 $\Omega$
Min Load Impedance	200 $\Omega$
Max Level	+23 dBu
Connectors	1/4" Phone Jack (TRS), XLR, Euroblock
<b>Overall</b>	
Frequency Response	20Hz – 20kHz $\pm$ 0.25dB
THD	<.01%@+20dBu
IM Distortion (SMPTE)	<.01%@+20dBu
Output Hum & Noise (unweighted)	-94dBu
Channel Separation	>85dB @ 1Khz
Gain Control	$-\infty$ to +6dB
<b>Filters</b>	
Type	Constant Q/Wein Bridge
Number	31
Bandwidth	1/3 Octave
Tolerance	$\pm$ 3%
Range	$\pm$ 6dB, $\pm$ 15dB (switchable)
Subsonic Filter	18dB/Octave @ 40Hz
<b>Power Requirements</b>	
Nominal Voltage	100-240 VAC (50-60 Hz)
Minimal Voltage	85 VAC
Power	30W
<b>Physical</b>	
Shipping Weight	16 lbs (7.3kg)
Dimensions	19"Lx3.5"Hx8"D (483 x 89 x 203mm)

## LIMITED WARRANTY (USA ONLY)

**(Other countries please contact your respective distributor or dealer.)**

**For units purchased in the USA,** warranty service for this unit shall be provided by ASHLY AUDIO, INC. in accordance with the following warranty statement.

ASHLY AUDIO, INC. warrants to the owner of this product that it will be free from defects in workmanship and materials for a period of FIVE years from the original-date-of-purchase. ASHLY AUDIO INC. will without charge, repair or replace at its discretion, any defective product or component parts upon prepaid delivery of the product to the ASHLY AUDIO, INC. factory service department, accompanied with a proof of original-date-of-purchase in the form of a valid sales receipt. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

**EXCLUSIONS:** This warranty does not apply in the event of misuse, neglect, or as a result of unauthorized alterations or repairs made to the product. This warranty is void if the serial number is altered, defaced, or removed. ASHLY AUDIO, INC. reserves the right to make changes in design, or make additions to, or improvements upon, this product without any obligation to install the same on products previously manufactured.

Any implied warranties, which may arise under the operation of state law, shall be effective only for FIVE years from the original-date-of-purchase of the product. ASHLY AUDIO, INC. shall be obligated to only correct defects in the product itself. ASHLY AUDIO, INC. is not liable for any damage or injury, which may result from, or be incidental to, or a consequence of, such defects. Some states do not allow limitations on how long an implied warranty lasts, or the exclusion, or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

### **OBTAINING WARRANTY SERVICE:**

**For warranty service in the United States, please follow this procedure:**

1) Return the product to ASHLY AUDIO, INC. freight prepaid, with a written statement describing the defect and application that the product is used in. ASHLY AUDIO, INC. will examine the product and perform any necessary service, including replacement of defective parts, at no further cost to you.

2) Ship your product to:

ASHLY AUDIO, INC.

Attention: Service Department

847 Holt Road

Webster, NY 14580-9103

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