



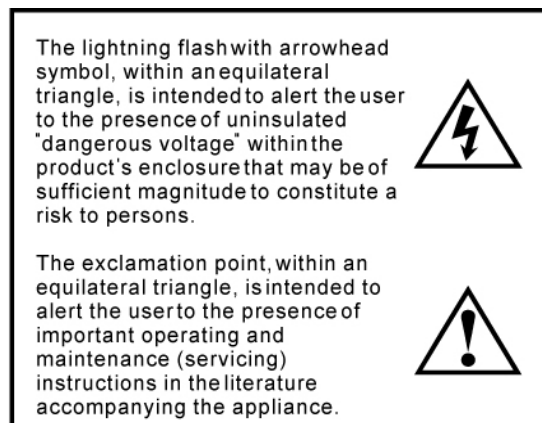
XA Series

Loudspeaker Management System

User Manual



XILICA Audio Design



Important Safety Instructions

1. READ THESE INSTRUCTIONS

All the safety and operating instructions should be read before the product is operated.

2. KEEP THESE INSTRUCTIONS

The safety and operating instructions should be retained for future reference.

3. HEED ALL WARNINGS

All warnings on the product and in the operating instructions should be adhered to.

4. FOLLOW ALL INSTRUCTIONS

All operating and use of instructions should be followed.

5. DO NOT USE THIS APPARATUS NEAR WATER

Do not use the product near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.

6. CLEAN ONLY WITH DRY CLOTH

Unplug the unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

7. DO NOT BLOCK ANY VENTILATION OPENINGS

Slots and openings in the cabinet back or bottom are provided for ventilation, to ensure reliable operation of the limit and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or similar surface. This product should never be placed near or over a radiator or heat source. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacture's instructions have been adhered to.

8. DO NOT INSTALL NEAR ANY HEAT SOURCES

This Product should be situated away from heat sources such as radiators, stoves, or other products (including amplifiers) that produces 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 prongs are 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 THEY EXIT FROM THE APPARATUS.

11. ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.

12. USE ONLY WITH 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 TO AVOID INJURY FROM TIP-OVER. Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury to someone, and serious damage to the appliance. A unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

13. UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.

For added protection for this unit during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.

14. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL. SERVICING IS REQUIRED WHEN THE APPARATUS HAS BEEN DAMAGED IN ANYWAY, SUCH AS WHEN THE 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 FROPPED.

15. WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

16. APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

Table of Contents

Table of Contents.....	4
1.0 Introduction	5
2.0 Features	6
3.0 Front Panel Functions	7
4.0 Rear Panel Functions.....	9
5.0 Powering Up the Device	10
6.0 Operating the Channel Menus	11
7.0 Operating the System Menus.....	18
8.0 Quick Reference	23
9.0 PC Control Software	24
10.0 Specifications	25
11.0 Warranty.....	27

1.0 Introduction

The XA series is a digital loudspeaker management system designed for the touring or fixed sound installation markets. The absolute latest in available technology is utilized with 40-bit floating point processors and high performance 24-bit Analog Converters. The high-bit DSP prevents noise and distortion induced by truncation errors of the commonly used 24-bit fixed-point devices. A complete set of parameters include I/O levels, delay, polarity, 8 bands of EQ per channel, multiple crossover selections and full function limiters. Precise frequency control is achieved with its 1 Hz resolution. Inputs and outputs can be routed in multiple configurations to meet any requirement. The XA series can be controlled or configured in real time on the front panel or with the intuitive PC XConsole GUI accessed via the RS-232 or USB interface. Software upgrade for CPU and DSP via PC keeps the device current with newly developed algorithms and functions once available. Multiple setup storage and system security complete this professional package.

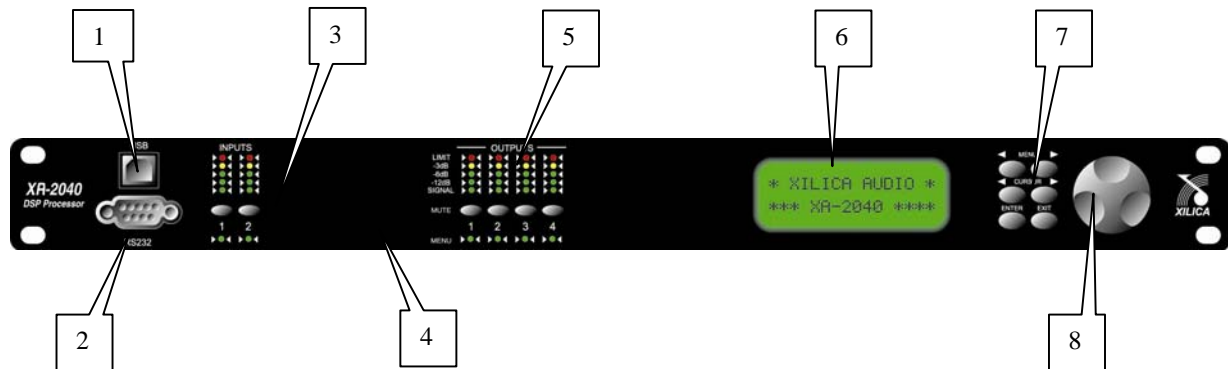
Shipped contents:

- XA Unit
- User Manual
- XConsole Software
- Power Cord

2.0 Features

- > 2 Inputs and 4 Outputs with flexible routing
- > 40-bit floating point DSP
- > 96kHz Sampling Rate
- > High Performance 24-bit A/D Converters
- > 1 Hz Frequency Resolution
- > 8 Equalizers (Magnitude or Phase) for each Input and Output
- > Multiple Crossover types with Full Function Limiters
- > Precise Level, Polarity and Delay
- > CPU and DSP upgrade via PC
- > Individual Channel Buttons with Linking capability
- > 2-Line x 16 Character Backlit LCD Display
- > Full 5-segment LED's on every Input and Output
- > Storage of up to 30 Preset Setups
- > Security Lock
- > USB and RS232 Interface for PC Control and Configuration

3.0 Front Panel Functions



1. **USB** – a standard Type B USB connector. Device driver from the provided software CD must be installed prior to usage.
2. **RS232** – a standard female DB9 socket. A straight through cable is required for PC connection.
3. **Mute (Channel Menu) Buttons** – Mute or un-mute input and output channels. When an input channel is muted, a red LED will come on for indication.

When the <<**Menu** or **Menu**>> key is held down, the **Mute Buttons** selects the corresponding channel for the LCD menu display and is acknowledged by a green LED below the button. The last modified menu will be displayed on the LCD. Multiple channels can be linked or unlinked by pushing the desired channels. This eases programming for same parameters across multiple channels. Multiple Inputs can be linked together and multiple outputs can be linked together. Inputs and Outputs are linked separately.

4. **Channel Menu LED** – Indicates the activated channels for data modification.
5. **Peak Level LED** – Indicates the current peak level of the Signal:

Signal, -12dB, -6dB, -3dB, Over/Limit. The Input **Limit** LED references to the device's maximum headroom. The Output **Limit** LED references to the threshold of the output limiter.

6. **LCD** – Shows all the necessary information to control the unit.
7. **Menu Buttons** – There are 6 menu keys: **<<Menu** (Menu Down), **Menu>>** (Menu Up), **<<Cursor** (Cursor Down), **Cursor>>** (Cursor Up), **Enter/Sys**, **Exit**. The functions of each key is explained below:

<<Menu:	Go to previous menu screen. Holding this button down while pressing Mute key will go to the specify channel menu.
Menu>>:	Go to next menu screen. Holding this button down while pressing Mute key will go to the specify channel menu.
<<Cursor:	Go to previous cursor in the menu screen.
Cursor>>:	Go to next cursor in the menu screen.
Enter/Sys:	Enter is used only in the System Menu to proceed with selected actions. Sys enters the System Menu from the main menu.
Exit:	Exit to the Main Menu .
8. **Rotary Thumb Wheel** – Changes parameter data values. The wheel has travel velocity sensing which ease large incremental data modifications. For modifying delay and frequency (1 Hz resolution), pressing the **Enter/Sys** key simultaneously will increment/decrement the data value by 100X.

4.0 Rear Panel Functions



1. **Main Power** – Connects via a standard IEC socket. A compatible power cord is supplied with the unit. The voltage input is 90-240VAC, 50-60Hz.
2. **Main Fuse** – T2.5A-250V. Slow blow type.
3. **Power switch** – Controls power On/Off.
4. **Analog Inputs and Outputs** – Separate 3-pin connectors are provided for each audio input and output. The device's output stage employs the balanced impedance topology. All I/O connectors have pin 1 as ground (shield), pin 2 as + and pin 3 as -.

5.0 Powering Up the Device

- After powering up the unit, the following initialization screen is displayed on the LCD:

```
** XILICA  XA **  
XA-2040   v9.00B
```

- The initialization process takes several seconds and during that period the unit boots and displays the device model and firmware version.
- After the initialization process is finished the XA displays its main screen:

```
** XILICA  XA **  
P01*
```

- The screen shows the current program number and program name assigned to the unit. If the program number ends with *, it means that no program is assigned, the last data before previous power down is recalled instead.
- Now the XA is ready to operate.

6.0 Operating the Channel Menus

Channel Linking – While holding down the **<<Menu or Menu>>**, more than 1 channel from the same group (Input or Output group) can be selected to link the channels together. The green LEDs below the **Mute** buttons are lit for the linked channels. Any modification of the data for the selected channel will be applied to the linked channels as well. To cancel the linking, simply deselect the desired channel while the **<<Menu or Menu>>** key is still pressed, or just press the **Exit** key to deselect all channels.

6.1 Input/Output Signal

LEVEL:

The level (or gain) ranges from -40.00dB to +15.00dB in 0.25dB steps.

I1:_____ Signal
LEVEL:0.00dB

POL:

The polarity (or phase) can be normal (+) or inverted (-).

I1:_____ Signal
POL:+

DELAY:

The maximum delay permitted is 90ms, in steps of approximately 10ms. It can be displayed in ms, ft or m. The time unit of the delay is set in the **System Menu**. Please refer to page 21 for more details.

I1: _____ Signal
DELAY:000.000ms

6.2 Input/Output Equalizer

EQ#:

Each input channel has 8 bands of equalization. This control selects one of the 8 available bands.

I1: _____ EQ1
EQ#:1

BYPASS:

This control will un-bypass (Off) or bypass (On) the currently selected band.

I1: _____ EQ1
BYPASS:Off

TYPE:

The 5 types of EQ that can be used are: parametric (PEQ), low shelf (LO-SHF), high shelf (HI-SHF), 1st degree all-pass (AP-1), and 2nd degree all-pass (AP-2).

I1: _____ EQ1
TYPE:PEQ

FREQ:

The EQ center frequency ranges from 20Hz to 30kHz in either 1Hz steps or 1/36 octave steps. The frequency steps can be selected in the **System Menu**. Please refer to page 21 for more details.

I1: _____ EQ1
FREQ:1000Hz

BW:

The EQ bandwidth ranges from 0.02 to 3.61 octaves in steps of 0.01 octave. The equivalent Q value is automatically shown besides the octave value. For 1st degree all-pass (AP-1) filter, the bandwidth will sets the phase shift at the centre frequency. This phase shift is gradually changed from 180 degrees above the centre frequency to the specified value.

I1: _____ EQ1
BW: 0.33 Q=4.36

I1: _____ EQ1
DEG: 15.5 deg

LEVEL:

The EQ level (or gain) ranges from -30.00dB to +15.00dB in 0.25dB steps.

I1: _____ EQ1
LEVEL: 0.00dB

6.3 Input/Output Crossover

TYPL:

The 3 available filter types for the low frequency crossover point (high pass) are: Butterworth, Linkwitz Riley or Bessel.

O1: _____ XOver
TYPL:Off

FRQL:

The filter cut-off frequency for the low frequency crossover point (high pass) ranges from 20 to 30kHz in either 1Hz steps or 1/36 octave steps. The frequency steps can be selected in the **System Menu**. Please refer to page 21 for more details.

O1: _____ XOver
FRQL:1000Hz

SLPL:

The filter slope for low frequency crossover point (high pass) ranges from 6 to 48dB/octave. The available slopes are 12, 24, 36 or 48 dB/octave.

O1: _____ XOver
SLPL:24dB

TYPH:

The 3 available filter types for the high frequency crossover point (low pass) are: Butterworth, Linkwitz Riley or Bessel.

O1: _____ XOver
TYPH:Off

FRQH:

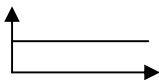


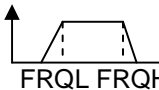
The filter cut-off frequency for the high frequency crossover point (low pass) ranges from 20 to 30kHz in either 1Hz steps or 1/36 octave steps. The frequency steps can be selected in the **System Menu**. Please refer to page 21 for more details.

O1: _____ XOver
FRQH: 1000Hz

SLPH:

The filter slope for high frequency crossover point (low pass) ranges from 6 to 48dB/octave. If the selected filter type is Linkwitz Riley, the available slopes are 12, 24, 36 or 48 dB/octave.

O1: _____ XOver
SLPH: 24dB

Filter configuration	Low crossover point	High crossover point	
None	FTRL Off	FTRH Off	
Highpass	FTRL not Off	FTRH Off	
Lowpass	FTRL Off	FTRH not Off	
Bandpass	FTRL not Off	FTRH not Off	

6.4 Input/Output Channel Name

NAME:

A 6 characters name can be assigned to each channel.

I1: _____ Name
NAME: _____

6.5 Output Limiter

THRESH:

The limiter threshold ranges from -20 to +20dBu in 0.5dB steps.

O1: _____ Limit
THRESH: +20.0dB

ATTACK:

The limiter attack time ranges from 0.3 to 1ms in 0.1ms steps, then ranges from 1 to 100ms in 1ms steps.

O1: _____ Limit
ATTACK: 10ms

RELEASE:

The limiter release time can be set at 2X, 4X, 8X, 16X or 32X the attack time.

O1: _____ Limit
RELEASE: 8XAtck

6.6 Output Source

IN1-2:

This sets the input channel source for the current output channel. It can be used to mix the input source (in dB) or disable it (Off). If more than one input sources are enabled, they will be added together as the source for the current output channel.

O1:_____ Source
IN1:Off

O1:_____ Source
IN2:-14.00

7.0 Operating the System Menus

The **System Menus** allow the user to control and change parameters that are related to the system behavior and general operation. It can be accessed by pressing the **Sys** key in the main menu (when no Input/Output or System Menu is activated). All System Menu require pressing the **Enter** key to confirm and save the settings.

7.1 Preset Recall

The XA has a built in non-volatile memory that can store up to 30 different preset setups.

P:

This control selects which program to recall from the non-volatile memory. The program name is displayed to the right of the program no.

SYSTEM	Recall
P:1	_____

7.2 Preset Store

The XA has a built in non-volatile memory that can store up to 30 different preset setups. A program can be stored using this menu. The old program with the same program number will be replaced. Once the program is stored in the flash memory, it can be recalled at a later time, even after power down.

P:

This control selects which preset location in the non-volatile memory to be saved.

SYSTEM	Store
P:1	

NAM:

A descriptive name of up to 12 characters can be assigned to each program.

SYSTEM Store
NAM: _____

7.3 Copy Channels

Copy Channels from the source to the target. When the Source and Targets are both Inputs and Outputs, all audio parameters will be copied. When one of the Source or the Target is an input while the other is an output, only the Level, Polarity, Delay, EQ, Crossover, and Channel Name are copied.

SOURCE:

This is the channel to be copied from.

SYSTEM Copy
SOURCE: In1

TARGET:

This is the channel to be copied to.

SYSTEM Copy
TARGET: In2

7.4 General Settings

FREQ MODE:

This changes the frequency control mode for EQ and crossover filters. It can be 36 steps/octave or All Frequencies (1 Hz resolution).

SYSTEM Gener1
FREQ MODE: All

DELAY UNIT:

This sets the time unit for input and output delay to ms, ft, or m.

```
SYSTEM      Gener1
DELAY UNIT:ms
```

7.5 Communication Settings

NOTE: User must power cycle the unit for this settings to take effect.

DEVICE ID:

This control assigns a device ID from 1 to 16 to the unit. This ID is only useful when a network of more than 1 device is used. In normal operation the device ID is 1.

```
SYSTEM      Comm
DEVICE ID:1
```

BAUD RATE:

The sets the baud rate of the serial communication. XConsole uses a baud rate of 115200, it should be left unchanged for most users.

```
SYSTEM      Comm
BAUD RATE:115200
```

7.6 Security lock and unlock

PASSWORD:

The password is 4 characters in length. The factory default of a new unit does not require a password.

The device can be protected for unauthorized parameter and /or system abuse. The security settings can be controlled and stored in the device with the XConsole GUI only.

When the correct password is entered in the device all the locks are disabled. After reentering the password or powercycling the device, the locks are automatically enabled again.

```
SYSTEM      Secure
PASSWORD:____
```

7.7 Factory Settings

CURRENT:

This resets all the current parameters back to factory default settings only, while stored presets and system settings stay untouched.

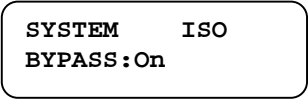
```
SYSTEM      Reset
CURRENT:Yes
```

7.8 ISO Settings

```
SYSTEM      ISO
THRESHOLD:102
```

This Internal System Optimizer reduces ground floor noise if no signal is present.

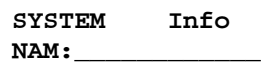
If unwanted Noise Gate effects are audible on low sound levels it can be switched to bypass mode.



SYSTEM ISO
BYPASS:On

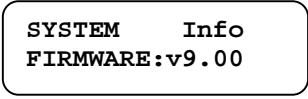
7.9 INFO

This menu contains 3 info screens:
The first screen displays the device name



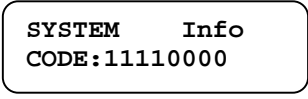
SYSTEM Info
NAM:_____

The second screen displays the Firmware version



SYSTEM Info
FIRMWARE:v9.00

And the third and last screen displays the security code.
When no password is set the factory default code is 11110000.



SYSTEM Info
CODE:11110000

When another combination of characters is displayed a password is set in the device and certain functions are disabled for the user to modify.

8.0 Quick Reference

Parameters	Min	Max	Steps	Units
Level	-40	+15	0.25	dB
Polarity	+ / -			
Delay	0	8,640	1	21us steps
EQ Number	1	8	1	
EQ Bypass	Off / On			
EQ Type	PEQ / Lo-Shf / Hi-Shf / AP-1 / AP-2			
EQ Level	-30	+15	0.25	dB
EQ Frequency	20	30,000	1	Hz
EQ Bandwidth	0.02	3.61	0.01	Octave
Crossover Low	Off / Butterworth / Linkwitz-Riley / Bessel			
Crossover Low	20	30,000	1	Hz
Crossover Low	6	48	6	dB/octave
Crossover High	Off / Butterworth / Linkwitz-Riley / Bessel			
Crossover High	20	30,000	1	Hz
Crossover High	6	48	6	dB/octave
Limiter Threshold	-20	+20	0.5	dBu
Limiter Attack Time	0.3	100	0.1/1	ms
Limiter Release Time	2 / 4 / 8 / 16 / 32X Attack time			
Source	Off	+15	0.25	dB
Channel Name	6 characters			

9.0 PC Control Software

The XA series is shipped with a special PC Graphic User Interface (GUI) application - XConsole. XConsole gives the user an option to control the unit from a remote PC. The GUI application makes it much easier to control and monitor the device, allowing the user to get the whole picture on one screen. Programs can be recalled and stored from/to PC's hard drive, thus expanding the storage to become virtually limitless.

XConsole can be connected to the XA series via RS232 or USB. USB requires the installation of additional driver. The user is given an option to install it during the installation of XConsole, and if the user did not install it at that time, they may choose to do so by running the USB driver installer from the provided software.¹

¹ The latest version of XConsole and USB driver are available at www.xilica.com.

10.0 Specifications

Inputs and Outputs

Input Impedance:	>10k Ohms
Output Impedance:	50 Ohms
Maximum Level:	+20dBu
Type:	Electronically balanced

Audio Performance

Frequency Response:	+/- 0.1dB (20 to 30kHz)
Dynamic Range:	115dB typ (unweighted)
CMMR:	> 60dB (50 to 10kHz)
Crosstalk:	< -100dB
Distortion:	0.002% (1kHz @+4dBu)

Digital Audio Performance

Processor:	40-bit
Sampling Rate:	96kHz
Analog Converters:	High Performance 24-bit
Propagation Delay:	1.5ms

Front Panel Controls

Display:	2 x 16 Character Backlit LCD
Level Meters:	5 segment LED
Buttons:	Mute/Edit Controls Menu Controls
Dial Encoder:	Embedded Thumb Wheel

Connectors

Analog Inputs:	3-pin Female XLR
Analog Outputs:	3-pin Male XLR
RS-232:	Female DB-9
USB:	Type B
Power:	Standard IEC Socket

General

Power:	90-240 VAC (50-60Hz)
Dimensions:	19"x1.75"x9" (483x44x229 mm)
Weight:	10 lbs / 4.5 kg

Audio Control Parameters

Gain: -40 to +15dB in 0.25dB steps

Polarity: +/-

Delay: Up to 90ms per I/O

Equalizers (8 per I/O)

Type: Parametric, Lo-shelf, Hi-shelf, Phase 1, Phase 2

Gain: -30 to +15dB in 0.25dB steps

Bandwidth: 0.02 to 3.61 octaves (Q=0.3 to 72)

Crossover Filters (2 per Output)

Filter Types: Butterworth, Bessel, Linkwitz Riley

Slopes: 6 to 48dB/oct

Limiters (1 per Output)

Threshold: -20 to +20dBu

Attack: 0.3 to 100ms

Release: 2 to 32X the attack time

System Parameters

No. of Presets: 30

Program Names: 12 character length

Delay Units: ms, ft, m

Frequency Modes: 36 steps/oct, 1Hz resolution

Note: Specifications subject to change without notice

11.0 Warranty

The XA Series is warranted covering materials and workmanship for a period of five (5) years, as determined by the date of retail purchase (according to the sales receipt from an authorized dealer) or the date of manufacture if the sales receipt is not available (according to the serial number). This warranty applies to the product; therefore, the remainder of the warranty period will be automatically transferred to any subsequent owner. This warranty applies only to failure of a Xilica product caused by defects in materials and workmanship during the stated warranty period. It does not apply to a unit that has been subjected to abuse, accident, modification, improper handling/installation, or repairs made without factory authorization or by anyone other than authorized Xilica Field Service Stations. This warranty is void if the serial number has been defaced, altered or removed. Products covered by this warranty will be repaired or replaced at the option of Xilica, without charge for materials or labor, provided all the terms of this warranty have been met.

For factory service, please call or email for a Return Authorization (R/A) number before shipping. If the product is shipped, the following information must be included in the package:

1. Owner's complete name, daytime phone number, return street address and return authorization number.
2. The serial number of the product being returned and a copy of the retail sales receipt, if possible.
3. A complete description of the problem(s) experienced, including a brief description of how the equipment is being used and other equipments involved.

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XILICA Audio Design

www.xilica.com