

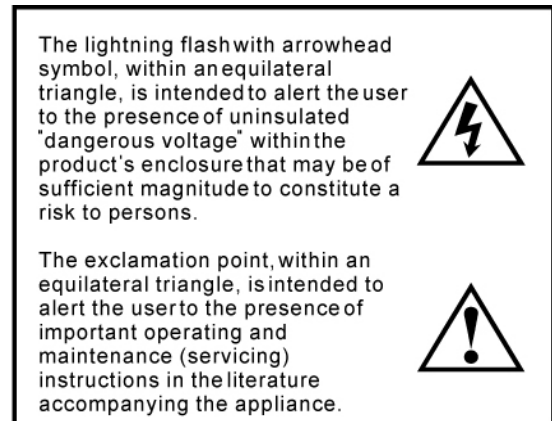
XM-2040

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.

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1.0 Introduction

The XM-2040 is a complete 2 input - 4 output digital loudspeaker management module targeted for Active Loudspeaker integration. 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 requirements. The XM-2040 can be controlled or configured in real time with the intuitive PC GUI accessed via the RS-232, USB or Ethernet (optional) interface. Software upgrade for CPU and DSP via PC keeps the device current with newly developed algorithms and functions once available.

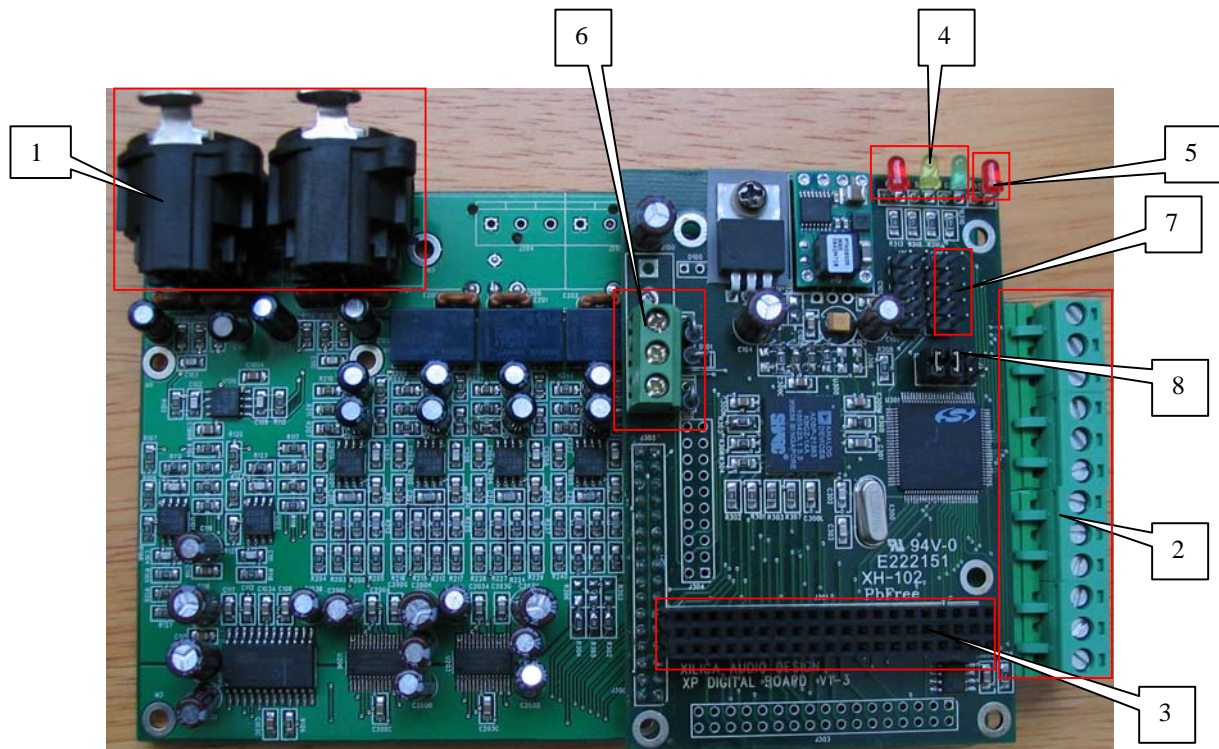
Shipped contents:

- XM-2040 unit
- External RS232/USB Board
- XConsole Software
- User Manual

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
- > 3-segment LED's on Input 1
- > Storage of up to 30 Program Setups
- > 4 Jumpers Controlled Startup Program
- > Security Lock
- > RS-232, USB and Ethernet (optional) Interface for PC Control

3.0 The XM-2040

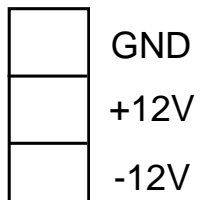


1. **XLR inputs** - Separate 3-pin XLR connectors are provided for each audio input. All connectors have pin 1 as ground (shield), pin 2 as + and pin 3 as -.
2. **Euro outputs** – Single 12-pin Euro Type connectors are provided for output channels. Pins 1, 4, 7, 10 are ground, pins 2, 5, 8, 11 are + and pins 3, 6, 9, 12 are -. See “Euro Outputs”, p. 9.
3. **Option Slot** - Option slot for add-ons such as Ethernet Connectivity
4. **Peak Level LED** - Indicates the current peak level of the Signal: Signal, -3dB, Over/Limit. The Input **Over** LED references to the device's maximum headroom.
5. **Power LED** – Indicates whether the device is powered on. A flashing LED means there is an error and requires a system reset.

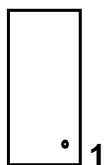
6. **Power** – Connector for the external power supply. See “Power”, p. 9.
7. **Serial Port** – Connector for the RS232 or USB (optional) circuit board. See “Serial Port”, p. 9.
8. **Startup Program** – Select the startup program using jumpers. See “Startup Program”, p. 9.

4.0 Connector Pin-outs

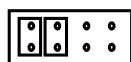
4.1 Power



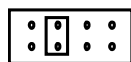
4.2 Serial Port



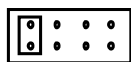
4.3 Startup Program



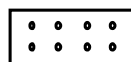
PROG 1



PROG 3

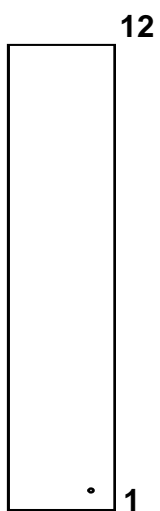


PROG 2



PROG 4

4.4 Euro Outputs



5.0 Powering Up the Device

- Upon powering up the unit, the red Power LED should light up.
- The initialization process takes about 8 seconds.
- If the Power LED flashes at a 1 second interval, there is an error and the device needs to be reset.
- Now the XM-2040 is ready to operate.

6.0 Operating the Device

The XM-2040 is shipped with a special PC Graphic User Interface (GUI) application - XConsole. XConsole gives the user an option to control the XM-2040 unit from a remote PC via the serial communication link. 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 XM-2040 via RS232, USB or Ethernet. 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 CD.¹

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

7.0 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			

8.0 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

LEDs:	Power, Signal, -3dB, Clip
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Connectors

Analog Inputs:	3-pin XLR (x2)
Analog Outputs:	12-pin Euro Type (x1)
RS-232:	Female DB-9
Power:	4-Pin Screw Terminal Type

Option Connectors

USB:	Type B
Ethernet:	RJ45 CAT-5

General

Power:	+/-12V (500mA max)
Dimensions:	6" x 4" x 1" (152 x 102 x 25 mm)
Weight:	1 lbs / 0.45kg

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
Channel Names: 6 character length

Note: Specifications subject to change without notice

9.0 Warranty

The XM-2040 is warranted covering materials and workmanship for a period of one (1) year, 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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