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Introduction

Thank you for choosing the Studiophile Series LX4-2.1 / 5.1 studio nearfield monitor speakers. M-Audio is well known for digital audio interface technology, digital converters, audio preamps and mixers. Now, born from extensive research and development, the Studiophile LX4-2.1 System and 5.1 Expander is changing the concept of studio reference monitoring in 2.1 / 5.1 systems.

The LX4-2.1 System is designed with the option to add the LX4-5.1 Expander package, thereby upgrading to the LX4 Surround System, a 5.1 system for music production or playback of 5.1 music and sound tracks. This feature makes the LX4 system extremely flexible, fitting into all modern digital music production and playback applications.

The LX4 Surround System was designed to overcome the size limitations of conventional studio reference monitors within the digital audio environment. The compact system delivers wide-range frequency response by employing two extraordinary drivers, both of which are magnetically shielded for desktop music production, and a unique crossover and equalization technology, licensed by M-Audio. The LX4-2.1's Subwoofer provides extended low frequency down to 40Hz, making it possible for the LX4 Surround System to use much smaller Satellite Speakers and offer both ultimate convenience for desktop production and highly accurate 40 to 20Khz frequency response range.

Designed and tested by veteran audio engineers to meet your needs in the studio monitoring environment, the LX4 Surround System's goal is focused on delivering pure, original sound without any additional coloration. The LX4 Satellite monitors are self-powered from amplifiers contained in the Subwoofer enclosure, which directly accepts a line level signal from a variety of sources.

For pro engineers at commercial studios to home studio owners, the Studiophile LX4 Surround System sets a new affordable standard in studio monitoring.

What's in the Box?

Your Studiophile LX4 box contains:

- LX4 Satellite Speakers (2), (three for 5.1 Expander)
- LX4 Subwoofer Speaker (2.1 System only)
- Speaker Wires (2), (three for 5.1 Expander)
- AC Power Cord, detachable (2.1 System only)
- Actual test results of your LX4 system
- This manual

Studiophile LX4 Surround System Features

1. Satellite Woofer - the Satellite Speaker's woofer units are 4 inches in diameter with a magnetically shielded mineral-filled polypropylene cone, high-temperature voice coil and damped closed cell foam surround. It is designed to deliver balanced mid- and low-frequency response. Polypropylene is used to react against the input signals accurately, and to deliver even minimal input precisely while minimizing distortion.

2. Satellite Tweeter - by employing a specially developed 1-inch mylar dome with magnetic shielding, the Satellite Speaker's tweeters can deliver distortion-free original sound and offer extremely natural response. It minimizes reaction time by using a uniquely shaped mylar dome for excellent delivery, and also minimizes resonance by adapting a unique internal damping technology.

3. Sub-Woofer (LX4-2.1 System) - the Sub-woofer unit is 8 inches in diameter with a specially developed curved profile pulp cone, high-temperature voice coil and damped closed cell foam surround. It is designed to deliver subwoofer sound pressure at very high efficiency with extremely low distortion.

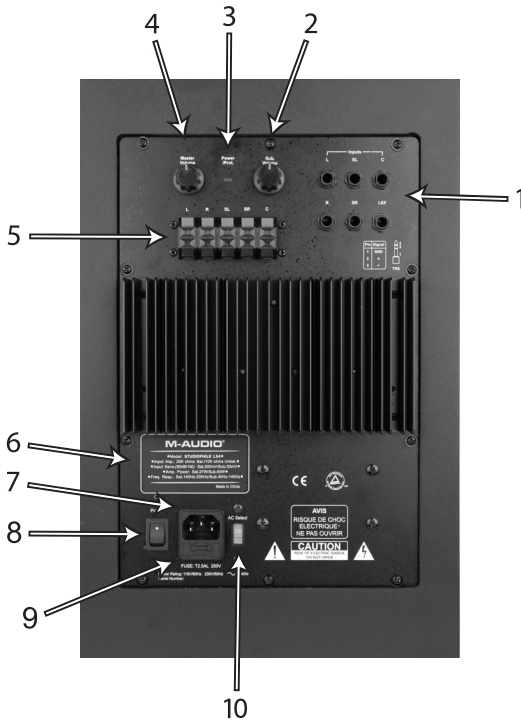
4. Enclosure - just as other components do, the LX4 Surround System enclosures have an important role to play. In order to provide more stable performance, these enclosures employ a special high-density MDF and unique interior reinforcement designed to absorb vibration and impact generated under extreme conditions.

5. Network & Power Amplifiers - the LX4 Surround System's active equalization and crossover networks, as well as the power amplifiers housed in the 2.1 Sub-woofer are specially designed for the specific carefully-chosen woofer, tweeter and sub-woofer drivers. The network properly distributes low, mid, and high frequencies to the components in order to reduce distortion and loss of signal, thereby achieving a naturally balanced sound.

In order to generate powerful, ultra-crisp sound, there are six separate power amplifiers inside the LX4-2.1 Subwoofer module. These separately drive the Sub-Woofer, Left, Right, Center and Surround Left and Right speakers in a high-end multiple-amplifier structure. The power delivered to the sub-woofer driver is 60W, while 27W each is delivered to the Satellite Speakers.

6. Expandable System - LX4-2.1 System is designed with the option to add the LX4-5.1 Expander package, thereby upgrading to a 5.1 system for music production of 5.1 music and sound tracks. The feature makes the LX4 system extremely flexible, able to fit all modern digital music production and playback applications.

Speaker Enclosure Front and Rear Panel Features



LX4-2.1 Subwoofer, Rear

I. TRS Inputs: These jacks accept 1/4" connections with either balanced or unbalanced wiring. For balanced wiring, a three-conductor TRS plug is necessary. The input wiring of a TRS connector should be as follows:

TRS TIP - Signal positive (+)

TRS RING - Signal negative (-)

TRS SLEEVE - Signal ground (Shield)

Unbalanced 1/4" wiring can be done with either a two- or three-conductor (TS or TRS) plug. A two-conductor (TS) plug automatically grounds the signal negative input, whereas a three-conductor (TRS) plug, wired unbalanced, provides the option of leaving the negative input open or grounded. We recommend that you ground the unused negative input (this can be done by wiring the ring and sleeve of the TRS plug together).

There are 6 TRS Inputs, as follows:

L - Left Ch. Input

SL - Surround Left Ch. Input

C - Center Ch. Input

R - Right Ch. Input

SR - Surround Right Ch. Input

LFE - Low Frequency Effect Input

- 2. Sub Volume:** Use the Sub Volume to set the Subwoofer output sound pressure level relative to other output channels as required. Once the subwoofer to satellite balance is achieved, use the Master Volume to control overall listening levels.
- 3. Power / Protect. LED:** When the power switch is switched to ON, the LED will glow “Green.” When the Protection circuitry of the power amplifiers has turned on because of any abnormal conditions, including overdriving the speakers into heavy clipping for too long, the LED will glow “Orange” and the output level will reduce by 12dB.
- 4. Master Volume:** Use the Master Volume to set the output sound pressure of all channels from the LX4 system to proper level as required.
- 5. Speaker Outputs:** (5) spring-type Speaker Output terminals for connecting (5) Channel Amplifier Outputs to all speaker channels, as follows:
 - L:** Use Speaker wire included in the LX4-2.1 package to connect the L channel amplifier output to the Left Speaker.
 - R:** Use Speaker wire included in the LX4-2.1 package to connect the R channel amplifier output to the Right Speaker.
 - SL:** Use Speaker wire included in the optional LX4-3.0 package to connect the Surround Left channel amplifier output to the Surround Left Speaker.
 - SR:** Use Speaker wire included in the optional LX4-3.0 package to connect the Surround Right channel amplifier output to the Surround Right Speaker.
 - C:** Use Speaker wire included in the optional LX4-3.0 package to connect the Center channel amplifier output to the Center Speaker.
- 6. Product Label:** This label contains the model and serial number information.
- 7. Power Receptacle:** Accepts a detachable 3-circuit line cord in order to apply AC power to the entire LX4 system.
- 8. Power Switch:** This switch turns the LX4 system on and off. The “On” position is indicated by a white dot.
- 9. Fuse Holder:** Holds the external main fuse.
- 10. Voltage-select Switch:** Provides 2 selections, 115VAC (120VAC) and 230VAC. This switch should be set to match the “house supply” (receptacle) voltage of the country or location in which the speaker is used. The 115VAC (120VAC) setting is correct for the USA, while the 230V setting is correct for most of the UK and Europe.

LX4-2.1 Subwoofer, Front

The front panel of the Subwoofer houses the Subwoofer driver and Sub-Frequency Port.

LX4 Satellite Speaker, Rear

The rear panel of each Satellite Speaker houses a single pair of spring-type speaker terminals.

LX4 Satellite Speaker, Front

The front panel of each LX4 Satellite Speaker houses single Woofer and Tweeter drivers.

Installation - LX4-2.1 System

For optimal performance of the LX4-2.1, please read the following thoroughly and carefully prior to installation.

Precautions

Handling: Please do not touch the speaker cones. The LX4-2.1 speaker set is packaged in the box tightly, so your attention is required when taking the monitors out of the box. To avoid possible damage to the speaker units, hold both sides of the monitor in order to pull it out of the box. The speaker cones should not be touched in order to avoid damage even after they are out of the box.

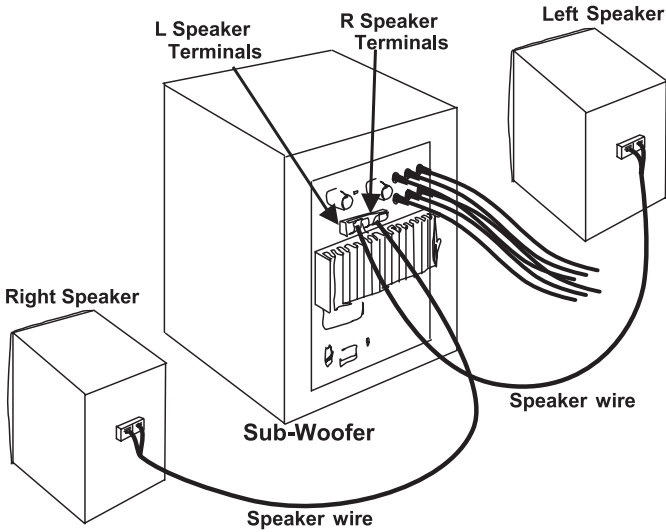
Connections: Using the included Speaker Wires, connect the Left and Right Speaker inputs to the corresponding speaker terminals on the rear panel of the subwoofer. Then, connect the TRS balanced/unbalanced inputs of the LX4 subwoofer unit to the desired corresponding pre-amp, computer or game console outputs (see the following diagrams). We recommend that you use high-quality balanced or unbalanced cables for these input connections. Also, turn off the power of the LX4 and turn the volume of the LX4 down to a minimum before making the necessary connections.

Correct Power Operation: Since the LX4-2.1 System contains amplifiers, it must be connected to a power outlet using the detachable AC cable provided. Before connecting power, please make sure that the Voltage-Select Switch located on the speaker's rear panel is set to the appropriate position, as described in the rear-panel features list appearing earlier in this manual.

WARNING! - Use of improper Voltage-Select Switch combinations may result in hazardous conditions and/or damage to speaker components not covered by speaker warranty.

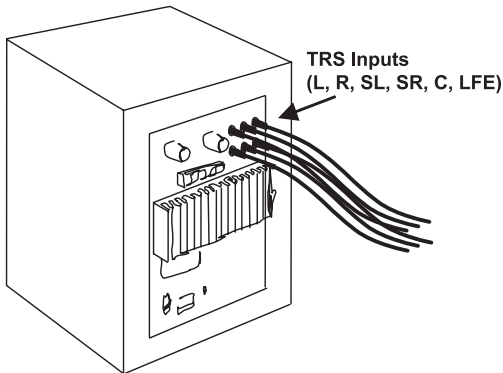
Speaker Wire Connections

Use speaker wires included in LX5-2.1 package to connect the Left and Right Speaker output terminals, found on the Subwoofer's rear panel, to the Left and Right Speakers.



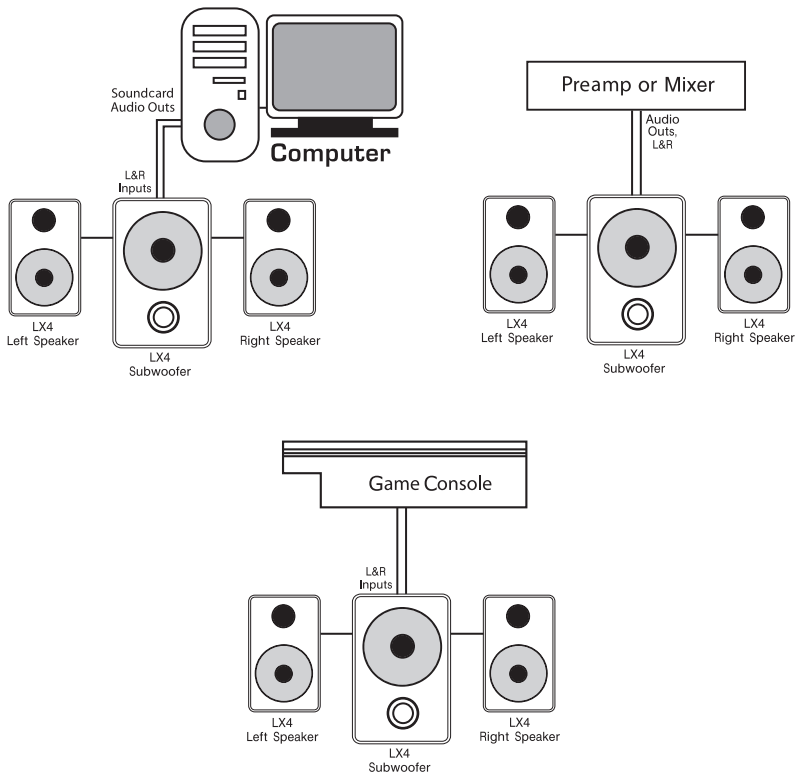
TRS Balanced/Unbalanced Connections

Assure that the LX4's power switch is turned to the off position and that it's Master Volume is turned all the way down. Connect the male end of a TRS balanced or TS unbalanced cable to the TRS inputs on the Sub-woofer's rear panel.



Connecting to Preamp, Computer or Game Console Outputs

Before connecting, make sure the output device's power has been turned off. Plug the TRS balanced or TS unbalanced cable to the corresponding output connectors of a pre-amplifier, computer or game console.



Installation - LX4-5.1 Expander

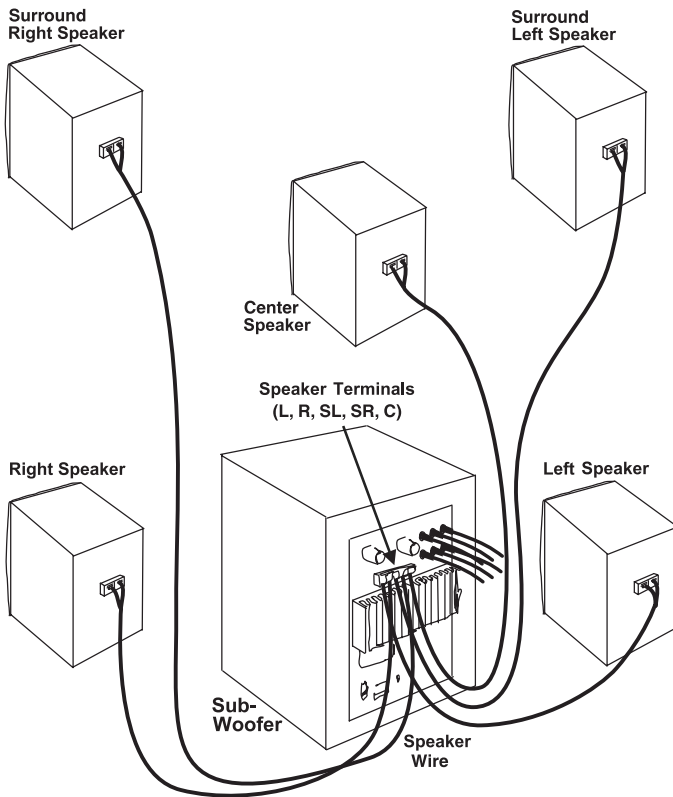
For optimal performance of the LX4-5.1 Expander, please read the following thoroughly and carefully prior to installation.

Precautions

Handling: Please do not touch the speaker cones. The LX4-5.1 expander set is packaged in the box tightly, so your attention is required when taking the monitors out of the box. To avoid possible damage to the speaker units, hold both sides of the monitor in order to pull it out of the box. The speaker cones should not be touched in order to avoid damage even after they are out of the box.

Speaker Wire Connections

Use speaker wires included in LX4-5.1 Expander package to connect the SL (Surround Left), SR (Surround Right) and C (Center) Speaker output terminals, found on the Subwoofer's rear panel, to the SL, SR and C Speakers.

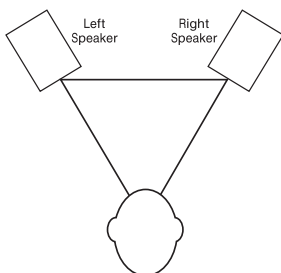


Placing the Speakers - LX4-2.1 System

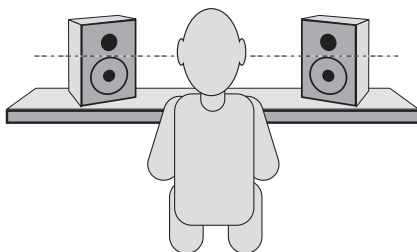
Placing the speakers is one of the most important procedures. To monitor with the LX4s performing to their maximum capability, an appropriate listening environment and correct placement are required. Please refer to the following for correct LX4-2.1 placement.

1. As a subwoofer is non-directional, you can place the subwoofer box at any convenient location, and then use the speaker wires to hook the Left and Right Speakers to the L & R Speaker Output terminals on the rear panel of subwoofer enclosure.

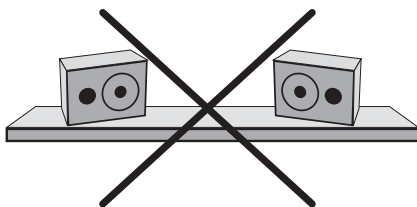
2. The two Left and Right speaker units and the listener should basically align to form a regular, or equilateral triangle. Refer to the following diagram.



3. Position the monitors so that the tops of the woofers are level with your ears in a normal listening environment. Refer to the following diagram.



4. Place the LX4's Left and Right units vertically with the woofer on the bottom. Placing the LX4 monitors horizontally is not recommended.



Note: DO NOT place any obstacles that may block the flow of air in front or between the LX4s monitors. Also remove reflective materials such as glass, mirrors or metal from the monitoring environment. PLACE THOSE MATERIALS AWAY FROM THE PATH OF THE SOUND FROM THE LX4s.

Placing the Speakers - LX4-5.1 Expander

Placing the speakers is one of the most important procedures in order to monitor sound accurately. To monitor with the LX4s performing to their maximum capability, an appropriate listening environment and correct placement are required. Please refer to the following for correct LX4-5.1 placement.

- 1. The Center Speaker** - For best directional effect, try to have the center speaker at the same height as the L & R speakers. The front of the center speaker should also be aligned with, or slightly behind the L & R speakers. Avoid having it forward of the left and right speakers.
- 2. The SL & SR Speakers** - Properly conveying both directional effects and diffuse ambience requires an evenly distributed surround sound field comprising both directional and reflected sound. This is achieved in movie theatres by means of many direct-radiating surround speakers (typically ten or twenty) along the sides and rear of the auditorium. Listening tests have also confirmed that it is the side speakers that contribute the spaciousness or “openness” associated with good surround sound. Theatres use speakers at the rear only because without them, the surround sound field would appear to be in front of, rather than around, those seated in the back rows. In monitoring environments, just two surround speakers, one to each side, are usually enough to achieve proper results. Too much direct sound from the surround speakers can make their location too obvious, or create an earphone-like, “in-the-head” sound image. On the other hand, too much diffusion may disperse the image such that it utterly directionless seemingly everywhere at once. Finding the right balance of direct and reflected sound means considering speaker placement, room design, and the acoustics characteristics of both.
 - Location - If it is possible, place surround speakers to either side of sitting position.
 - Height - If space permits, install surrounds 2-3 feet above sitting position. This helps to minimize localization effects.
 - Aiming - Aiming surround straight across the room, not down at sitting position, helps create a more open, spacious surround sound field.

Experiment with placement until surround sounds seem to envelop you, rather than coming from behind. As a general rule, do not aim the surround speakers directly at the sitting position.

Remarks: DO NOT place any obstacles that may block the flow of air in front or between the LX4s monitors. Also remove reflective materials such as glass, mirrors or metal from the monitoring environment. PLACE THOSE MATERIALS AWAY FROM THE PATH OF THE SOUND FROM THE LX4s.

Technical Support & Contact Information

For additional help, contact M-Audio Technical Support by telephone (626-445-8495, 9-5 PST M-F), by fax (626-445-7564) or by e-mail (techsupt@m-audio.com).

If you have any questions, comments or suggestions about this or any M-Audio product, we invite you to contact us directly at:

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Warranty Terms

M-Audio warrants products to be free from defects in materials and workmanship, under normal use and provided that the product is owned by the original, registered user. Visit www.m-audio.com/warranty for terms and limitations applying to your specific product.

Warranty Registration

Thank you for registering your new M-Audio product. Doing so immediately both entitles you to full warranty coverage and helps M-Audio develop and manufacture the finest quality products available. Register online at www.m-audio.com/register to receive FREE product updates and for the chance to win FREE M-Audio gear.

Appendix A - Technical Specifications

Type: 3-way studio reference with subwoofer (2.1 System), expandable to 5.1

Subwoofer Driver: 8 inch diameter, specially-developed curved-profile pulp cone, high-temperature voice coil and damped closed cell foam surround - designed for sub-frequency pressure levels with very high efficiency and extremely low distortion

LF Driver: 4-inch dia., magnetically-shielded with curved mineral-filled polypropylene cone, high temperature voice coil and damped closed cell foam surround

HF Driver: 1-inch dia., magnetically-shielded; specially-shaped mylar dome

Frequency Response: 40Hz - 20kHz

Crossover Frequencies: 2.9kHz and 140Hz

RMS SPL @ 1 meter: 105dB

Subwoofer Amplifier Power: 60W

Sat Amplifier Power: 27W (Five Sat Amplifiers)

Dynamic Range: >100dB

S/N Ratio: >100dB below full output, 20kHz bandwidth

Input Connectors: Six TRS balanced/unbalanced input connectors (L, R, SL, SR, C & LFE)

Polarity: Positive signal at + input produces outward low-frequency cone displacement

Input Impedance: 20k ohms balanced, 10k ohms unbalanced

Input Sensitivity, Sat: Input 100 mV pink-noise produces 90dBA output SPL @ 1meter w/ vol ctl at max setting

Input Sensitivity, LFE: input 50mV pink-noise produces 90dBA output SPL @ 1meter w/ vol cntrl at max setting

Protection: RF interference, output current limiting, over temperature, turn on/off transient, subsonic filter, external main fuse

Indicators: Green-Orange Power/Protection indicator (Back Panel). When the power switch is switched to ON, the LED will glow "Green". When the Protection circuitry of power amplifiers is turned on, the LED will glow "Orange." At the same time, the output level will reduce 12dB.

Power Requirements: Dual-voltage (selectable by rear-panel switch) for either 120V/~60Hz, 230V/~50Hz; powered via detachable 3-circuit line cord

Cabinets: vinyl-laminated MDF

Dimensions - L, R, SL, SR & C: 8.5" (H) x 5.75" (W) x 6.75" (D)

Dimensions - Subwoofer: 15.75" (H) x 9.75" (W) x 12.25" (D)

Weight - L, R, SL, SR & C: 4.5 lbs. each

Weight - Subwoofer: 21.9 lbs.

* All specifications subject to change without notice

Appendix B - Block Diagram

