

M-AUDIO

Studiophile™
CX5

English

User Guide

1. Introduction

Thank you for choosing the M-Audio CX5 bi-amplified studio monitors. The CX line of loudspeakers build on M-Audio's legacy of high performance studio monitors and provide accurate, high-resolution playback that is free of audible distortion and coloration. This allows you to hear everything that is in your source recordings so that you can create better mixes.

Even if you are experienced with recording and mixing, please take a moment to read through this guide. It will give you valuable information about how to set up your CX monitors and will help you get the most out of your new purchase.

2. What's in the Box?

This package contains:

- Pair of CX5 studio monitors
- Pair of IEC power cables
- Printed acoustic frequency response plot for each speaker
- This User Guide

3. About CX Studio Monitors

Typical mass-market loudspeakers sound pleasing because their designs incorporate a deliberately uneven, non-linear frequency response that artificially enhances certain bass and treble frequencies. While it may be quite enjoyable to hear finished albums on such speakers, actually mixing on this type of monitor is not recommended since such speakers tend to "smooth over" problem areas and do not reveal everything that should be fixed during a mix.

Unlike typical mass-market speakers, M-Audio's CX line of bi-amplified studio monitors have been designed to provide accurate, highly detailed, reliable playback that is free of distortion or coloration. This is done by having a tightly integrated system in which the CX drivers, internal electronics (amplifiers, crossover, etc.), and enclosure all work together to provide accurate bass, smooth high-frequency transient response, and a highly linear frequency response through the entire audible range of the speaker. This allows you to hear everything in your recorded tracks—the good and the bad things—so that you can spot and fix problems and ultimately create great mixes that "translate" well to other speakers and audio playback systems.

Note that the placement and orientation of the CX monitors within your studio is important and correctly placed speakers will result in improved imaging, clarity, and overall performance. This topic is covered in detail in the “Setting up CX Monitors” section of this guide.

Also note that the CX monitors feature several switches that help you contour the speaker to your specific studio. When these switches are left in their default positions, the CX monitor

will exhibit the response characteristics found on the printed acoustic frequency response plot that ships with each speaker. These anechoic* measurements represent performance of the speaker in an “ideal” environment similar to that found in a high-end recording studio with carefully tuned acoustics. In the real world, however, the acoustics of your specific studio (or the placement of your speakers within the studio) may cause your monitors to exhibit too little (or too much) bass, midrange, or treble. To help compensate for this, the rear-panel switches contour the frequency response of the speaker specifically to your studio. These switches are covered in detail in the “About the Rear-Panel EQ Contour Switches” section of this guide.

***About anechoic chambers:**

An anechoic chamber is a room in which the floor, ceiling, and all walls are covered with sound-absorbent acoustical wedges. These wedges prevent sounds created within the room from reflecting back and influencing the acoustic measurement of the loudspeaker.

Anechoic chambers are considered to be acoustically “neutral” spaces since the room itself does not impart any kind of sound to an acoustical source contained within the room. Because of this, loudspeakers (including CX monitors) are commonly measured and tuned in such rooms.

It’s in the details:

Did you know the shape and materials of a speaker cabinet can greatly affect the overall sound of a speaker?

Your CX monitors feature thick walls and a carefully placed internal brace to prevent the speaker from resonating at low frequencies. This means that the speaker cabinet itself will not ring along with the low frequency sounds in your mix (such as a kick drum or a bass). This translates into more accurate bass response.

Furthermore, the rounded (“radiused”) edges and contoured waveguide surrounding the tweeter are not just cosmetic touches intended to improve the appearance of the speaker. These features help spread high frequencies evenly around the room and widen the “sweet spot” between the two speakers.

4. Product Features & Specifications

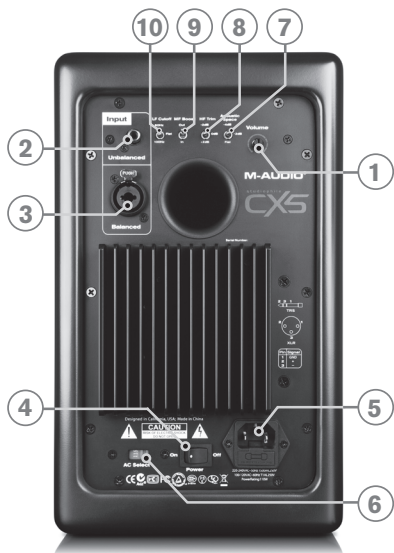
English

CX5
5 1/4" woofer with 1 1/2" voice coil
Waveguide loaded silk-dome tweeter with 1 1/4" voice coil
Bi-amplified class A/B amplifiers
50W woofer
40W tweeter
Frequency response: 50Hz to 30kHz (+/- 3dB)
XLR, 1/4" TRS, and RCA inputs
Magnetically shielded for placement near CRT (tube-based) monitors and televisions
Rear panel contour switches to optimize placement within any studio
Sturdy, acoustically inert 1" front and rear MDF baffles to prevent cabinet resonances
Flared rear firing port for audibly increased system headroom
Optimized internal bracing to minimize sonic "coloration" caused by the cabinet
Radiused (rounded) cabinet edges and acoustical waveguide for even high-frequency dispersion
Speaker protection: • Output current limiting • Over-temperature • Transient on/off protection to prevent speaker "pops" • Subsonic filter • External mains fuse

5. Hardware Controls and Indicators

Rear Panel

- ① **Input Gain Knob:** This knob adjusts the gain level of the XLR/TRS ③ and RCA ② inputs. The gain is at minimum when the knob is turned fully counter-clockwise; the gain is set to its maximum level when the knob is turned fully clockwise.
- ② **RCA Input:** This connector accepts line-level signals from audio sources with unbalanced RCA-style outputs.
- ③ **XLR/TRS Input:** This “combo” input jack accepts both XLR and 1/4” TRS-type connectors. Connect your audio interface, mixer, or other line-level audio source to this jack.



► **NOTE:** The XLR/TRS and RCA inputs are summed (i.e., mixed together) before arriving at the CX amplifier and it is possible to have two sound sources connected to a speaker at the same time. However, it is recommended that you do not play audio through both connectors simultaneously as this may overload the inputs and result in clipping (distortion) at the inputs.

- ④ **Power Switch:** This switch powers your CX monitors on and off.
- ⑤ **Power Connector:** This socket accepts a standard IEC-type power cable.
- ⑥ **Input Voltage Selector:** This recessed switch adjusts the input voltage from 100-120V or 220-240V and allows your CX monitor to be used worldwide. Make sure this switch is set correctly for your country to prevent damage to the speaker.

TIP: Power outlets in North America, Japan, and many parts of South America usually supply between 100V and 120V whereas outlets in Europe and most of Africa and Asia provide between 220V and 240V. If you are not sure about your region, be sure to check your power outlet's rating and set the Input Voltage selector before connecting and switching on your CX monitors.

- ⑦ **Acoustic Space Switch:** This switch allows you to set a “shelf” EQ to tailor low frequency response to your specific studio. See the section entitled “About the Rear-Panel EQ Contour Switches” to learn more about this switch.
- ⑧ **HF Trim Switch:** This switch allows you to adjust the high-frequency response of the speaker to your specific studio. See the section entitled “About the Rear-Panel EQ Contour Switches” to learn more about this switch.
- ⑨ **MF Boost Switch:** This switch allows you to contour the midrange response of the speaker to your specific studio. See the section entitled “About the Rear-Panel EQ Contour Switches” to learn more about this switch.
- ⑩ **LF Cutoff Switch:** This switch sets the low-frequency cutoff point of your CX monitor. See the section entitled “About the Rear-Panel EQ Contour Switches” to learn more about this switch.

Front Panel

- ⑪ **Power LED:** This blue LED illuminates when the monitor is receiving power and the rear panel Power Switch ④ is in the “ON” position.



6. Connection Diagram

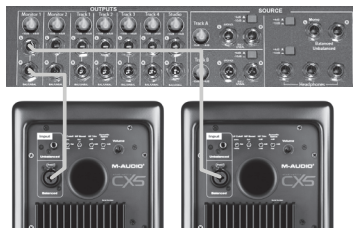
M-Audio CX monitors feature balanced XLR/TRS “Combo” and unbalanced RCA-type analog inputs on the rear panel. Connect the outputs of your mixer, audio interface, or other line-level device to these inputs.



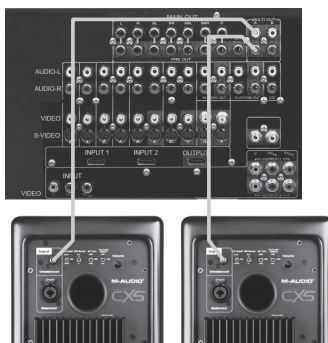
Audio Interface
(Balanced TRS to Balanced TRS)



Mixer
(Balanced XLR to Balanced TRS)



Control Room Router
(Balanced TRS to Balanced XLR)



Preamplifier Processor
(Unbalanced RCA to Unbalanced RCA)

► **NOTE:** the XLR/TRS and RCA inputs are summed (i.e., mixed together) before arriving at the CX amplifier and it is possible to have two sound sources connected to a speaker at the same time. However, it is recommended that you do not play audio through both connectors simultaneously as this may overload the inputs and result in clipping (distortion) at the inputs.

TIP: If your mixer, interface, or other audio source features both XLR/TRS and RCA-type outputs, use the XLR or TRS connectors instead of the RCA connectors whenever possible. XLR and TRS cables incorporate a “balanced” design that carries a signal over three conductors (“hot,” “cold,” and “ground”) instead of two conductors as found in RCA cables (“hot,” and “ground”). This results in lower noise, higher rejection of radio-frequency (RF) interference, and better overall fidelity. If XLR/TRS jacks are unavailable, use RCA-style cables but try to keep the cables as short as possible.

7. Setting up CX Monitors

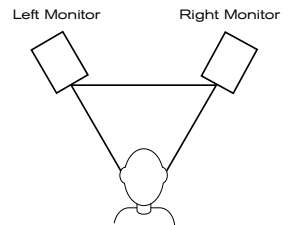
The configuration and placement of your CX monitors within your studio may affect the performance of the speakers. Use the following tips to achieve the best possible performance out of your CX monitors:

Speaker Placement

Place the CX monitors so that the two speakers and the engineer form an equilateral triangle when viewed from above. Angle the speakers slightly inward so that the woofer and tweeter face the engineer.

In general, it is recommended that CX monitors be placed at least one foot away from the nearest wall, ceiling, or any other large, flat surface (the reason for this is covered in detail in the following chapter of this guide). If practical considerations such as limited studio space make this impossible, CX monitors include an Acoustic Space Switch ⑦ to compensate for placement near walls and corners. See the following chapter of this guide to learn more about this switch.

TIP: If possible, place your CX monitors on speaker stands instead of your desk top. Desks tend to resonate sympathetically at low frequencies and may adversely affect the bass response of your monitors. If speaker stands are not possible due to space restrictions and you notice a buildup in bass, try placing the monitors on “speaker pads” to acoustically de-couple the monitors from the desk.

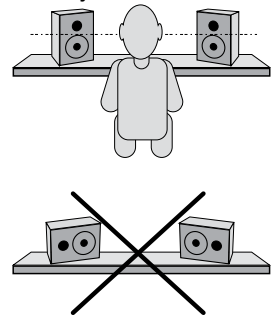


Speaker Height

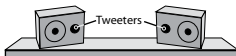
Position the speakers so that they are parallel to the ground and that your ears are between the midpoint of the woofer and the tweeter.

Speaker Orientation

If possible, place CX monitors in their upright position and avoid laying the speakers on their sides. The CX woofer and tweeter are vertically aligned and will provide the best performance when the speakers are placed upright. Placing them on their sides may create strong reflections from nearby surfaces resulting in spectrally unbalanced sound.



If your CX monitors must be oriented horizontally due to space or line-of-sight considerations, place the speakers so that their tweeters are on the “inside” to improve imaging.

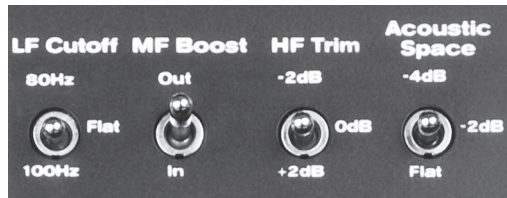


About the Rear-Panel EQ Contour Switches

These switches allow you to tailor the EQ curve of your CX monitors to complement the frequency response of your studio.

Since studio monitors (including the CX series) are designed to

have a flat frequency response, you may be wondering why these speakers include additional EQ switches. These switches are included for three reasons:



1. Size, shape, and acoustical treatment of your specific studio:

CX monitors are tested and tuned in an anechoic chamber to be as linear (flat) as possible. This means that leaving the switches set to their default settings will result in the printed acoustic frequency response plot when monitoring takes place in an “ideal” environment similar to those found in high-end recording studios. In these studios, acousticians carefully determine the size and shape of the control room, placement of the studio monitors and large furniture, construction materials of the walls and ceiling, as well as all acoustical treatments that must be applied to various parts of the room. All this ensures that studio monitors will sound as flat and accurate as possible at the “mixing position.”

In the real-world, however, most project and home-based studios are set up in preexisting rooms where the size/shape of the room cannot be easily modified to improve acoustics. This means that the design of the room itself may have adverse effects on the frequency response of the monitors (i.e., sound reflections from flat surfaces in the room may cause the monitors to not sound linear). For that reason, the CX line features “corrective” EQ switches to compensate for adverse effects that may be caused by your room.

2. Placement of the CX monitors within your studio:

The proximity of your CX monitors to the walls (and floors/ceilings) may adversely affect the frequency response of what you hear at the mixing position. This is because all speakers radiate low-frequency sounds in all directions—not just toward the mixing position. If there are large, flat surfaces (such as walls or ceilings) within one foot of the speaker, these surfaces act as low frequency “sound reflectors” that return bass energy projected from the rear of the speaker back into the studio. This can result in bass that sounds “tubby” and exaggerated.

3. Using a subwoofer:

If you plan to use a subwoofer with your CX monitors, you will need to filter out low frequency sounds so that only the subwoofer plays low-frequency sounds (the CX monitors will only play midrange and high-frequency sounds, in this scenario). This needs to be done so that the subwoofer and CX monitors do not both play the same low-frequency sounds, causing a greatly exaggerated bass response within your studio.

The CX line of monitors address all three of these issues with the following switches:

Acoustic Space Switch ⑦

As stated earlier in this section, your CX monitors should ideally be placed at least one foot away from the nearest wall, ceiling, or other large, flat surface. In the real-world, this may be impractical due to space limitations within your studio. For that reason, CX monitors feature an Acoustic Space Switch.

This switch compensates for placement near walls by “shelving” (reducing) frequencies below 200 Hz. This switch should be set as follows:

TIP: Be sure to leave at least 3" of space between the rear of the speaker and a wall to allow the rear-firing port to “breathe” properly. Placing the speaker any closer than 3" may adversely affect low-frequency response.

- 0dB** This default setting should be used if the monitors are placed at least one foot away from the nearest wall.
- 2dB** This setting reduces frequencies below 200 Hz by 2dB. Use this setting if the speakers must be placed closer than one foot from the nearest wall.
- 4dB** This setting reduces frequencies below 200 Hz by 4dB. Use this setting if the speakers must be placed within one foot of the corner of a room (i.e., the intersection of two walls).

HF Trim Switch ⑧

This control allows you to boost or attenuate (reduce) your CX monitors' high frequency response above 3kHz. This switch can be set in the following ways:

- 0dB** This default setting leaves high-frequency signals unaffected (high frequency sounds are neither boosted nor attenuated).
- +2dB** This setting boosts signals above 3kHz by 2dB.
- 2dB** This setting attenuates signals above 3kHz by 2dB.

To configure the HF Trim switch, begin by mixing a few songs with this switch set to the default "0dB" position. If your mixes sound good in the studio and on other speakers (car stereos, "multimedia" computer speakers, etc.), leave this switch in the default position.

If your mixes sound good in the studio but they sound "dull" and lack high-frequency "sparkle" on other playback systems, set this switch to "-2dB." Alternatively, if your mixes sound good in the studio but sound too "crispy" or "brittle" and contain too much high-frequency content, set this switch to "+2dB." Setting this switch to either "+2dB" or "-2dB" allows the CX monitors to compensate for a mixing environment that is either too "live" (i.e., too much high-frequency reflection from the walls and other surfaces) or too "dead" (i.e., not enough high frequency sound is being reflected around the room).

MF Boost Switch ⑨

This control engages a midrange boost from 1.5 KHz - 2.5 kHz with a 2 dB peak at 2 kHz. This switch can be set in the following ways:

- Out** This default setting allows incoming signals to bypass the midrange boost circuitry (the midrange of a signal is not affected).
- In** This setting engages the midrange boost circuitry and creates a 2dB peak at 2kHz with a 1 kHz bandwidth (i.e., signals between 1.5 kHz - 2.5 kHz are boosted).

To configure the MF Boost switch, leave the switch set to the "out" position and mix a few songs. If you notice your mixes sound good in the studio but the midrange tends to be too prominent (e.g., the vocals/guitars are too loud) on other speakers, set this switch to "in." This will make the midrange of your CX monitors slightly more pronounced in the studio and will result in more balanced mixes since you will be less inclined to "push" the midrange of your mixes.

LF Cutoff Switch ⑩

This control allows you to engage a high-pass filter that removes low-frequency sounds from the monitors. This switch can be set in the following ways:

- Flat** This default setting allows your monitors to play their entire frequency spectrum with no low-frequency filtering.
- 80Hz** This setting engages a second-order (12dB/octave) filter that rolls off frequencies below 80 Hz.
- 100Hz** This setting engages a second-order (12dB/octave) filter that rolls off frequencies below 100 Hz.

TIP: Many subwoofers feature a low-pass cutoff frequency of 80Hz. If you are not sure about your subwoofer, use this setting as a starting point. If playback still sounds too bass-heavy, try setting this switch to 100Hz to see if the low-frequency bass extension sounds more linear.

If you are using your CX monitors with a subwoofer that does not have a built-in crossover, set this switch as close as possible to the low-pass cutoff frequency of your subwoofer. The low-pass cutoff of the subwoofer should be listed in the “technical specifications” section of the subwoofer’s User Guide.

TIP: This switch can also be engaged if you wish to hear what your mixes would sound like on speakers with smaller woofers (such as those found in most televisions).

If your subwoofer has an internal crossover that sends high-frequency signals out to your main monitors through a pair of outputs, leave the LF Cutoff Switch on your CX monitors set to “Flat.”

8. Appendix A - Technical Specifications

CX5

Frequency response:	50Hz-30kHz (+/-3dB); -10dB at 50Hz
Crossover frequency:	2.6kHz
Low-frequency amplifier power:	50 watts with 14 gauge wiring to this transducer
High-frequency amplifier power:	40 watts with 14 gauge wiring to this transducer
LF cutoff	Flat, 80Hz, and 100Hz
MF boost	In/Out of 2dB centered at 2kHz
HF trim	+2dB, 0dB, -2dB above 3kHz
Acoustic space	0dB, -2dB, and -4dB
Maximum signal-to-noise (dynamic range):	> 97 dB (typical A-weighted)
Polarity:	positive signal at + input produce outward LF cone displacement
Input impedance:	20k ohms balanced, 10k ohms unbalanced
Input sensitivity:	100 mV pink noise input produces 92 dBA output SPL at one meter with volume control at maximum
Power:	factory programmed for either 115V ~50/60Hz or 230V ~50/60Hz
Protection:	RF interference, output current limiting, over temperature, turn-on/off transient, subsonic filter, external mains fuse
Cabinet:	Front and rear baffle 1" MDF with 3/4" MDF wrap. Black lacquer paint on enclosure with soft touch black paint on curved front plate.
Size:	13" (H) x 7.5" (W) x 9" (D); 33cm x 19cm x 23cm
Weight:	16.75 lbs./unit; 7.60 kg

* Above specifications subject to change without notice

9. Warranty

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

Immediately registering your new M-Audio product 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 M-Audio giveaways.



WARNING: This product contains chemicals, including lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. **Wash hands after handling.**

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