

User Manual



SUPER-X PRO CX2310

High-Precision Stereo 2-Way/Mono 3-Way Crossover
with Subwoofer Output

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Thank you

Thank you for the confidence which you have expressed in us by purchasing the SUPER-X PRO CX2310. The BEHRINGER SUPER-X PRO is a high-value, active frequency crossover, extremely well suited for both live and studio applications.

EN Important Safety Instructions



Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute risk of electric shock. Use only high-quality commercially-available speaker cables with ¼" TS plugs pre-installed. All other installation or modification should be performed only by qualified personnel.



This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that may be sufficient to constitute a risk of shock.



This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.



Caution

To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.



Caution

To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.



Caution

These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce 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 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.

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. Use only attachments/accessories specified by the manufacturer.



12. 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.

13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. 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.

15. The apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.

16. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.



LEGAL DISCLAIMER

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Trident Chambers, Wickhams Cay, P.O. Box 146, Road Town, Tortola, British Virgin Islands

LIMITED WARRANTY

§ 1 Warranty

① This limited warranty is valid only if you purchased the product from a MUSIC Group Authorized Reseller in the country of purchase. A list of authorized resellers can be found on BEHRINGER's website behringer.com under "Where to Buy", or you can contact the MUSIC Group office closest to you.

② MUSIC Group* warrants the mechanical and electronic components of this product to be free of defects in material and workmanship if used under normal operating conditions for a period of one (1) year from the original date of purchase (see the Limited Warranty terms in § 4 below), unless a longer minimum warranty period is mandated by applicable local laws. If the product shows any defects within the specified warranty period and that defect is not excluded under § 4, MUSIC Group shall, at its discretion, either replace or repair the product using suitable new or reconditioned product or parts. In case MUSIC Group decides to replace the entire product, this limited warranty shall apply to the replacement product for the remaining initial warranty period, i.e., one (1) year (or otherwise applicable minimum warranty period) from the date of purchase of the original product.

③ Upon validation of the warranty claim, the repaired or replacement product will be returned to the user freight prepaid by MUSIC Group.

④ Warranty claims other than those indicated above are expressly excluded.

PLEASE RETAIN YOUR SALES RECEIPT. IT IS YOUR PROOF OF PURCHASE COVERING YOUR LIMITED WARRANTY. THIS LIMITED WARRANTY IS VOID WITHOUT SUCH PROOF OF PURCHASE.

§ 2 Online registration

Please do remember to register your new BEHRINGER equipment right after your purchase at behringer.com under "Support" and kindly read the terms and conditions of our limited warranty carefully. Registering your purchase and equipment with us helps us process your repair claims quicker and more efficiently. Thank you for your cooperation!

§ 3 Return materials authorization

① To obtain warranty service, please contact the retailer from whom the equipment was purchased. Should your MUSIC Group Authorized Reseller not be located in your vicinity, you may contact the MUSIC Group Authorized Fulfiller for your country listed under

“Support” at behringer.com. If your country is not listed, please check if your problem can be dealt with by our “Online Support” which may also be found under “Support” at behringer.com. Alternatively, please submit an online warranty claim at behringer.com BEFORE returning the product. All inquiries must be accompanied by a description of the problem and the serial number of the product. After verifying the product’s warranty eligibility with the original sales receipt, MUSIC Group will then issue a Return Materials Authorization (“RMA”) number.

② Subsequently, the product must be returned in its original shipping carton, together with the return authorization number to the address indicated by MUSIC Group.

③ Shipments without freight prepaid will not be accepted.

§ 4 Warranty Exclusions

① This limited warranty does not cover consumable parts including, but not limited to, fuses and batteries. Where applicable, MUSIC Group warrants the valves or meters contained in the product to be free from defects in material and workmanship for a period of ninety (90) days from date of purchase.

② This limited warranty does not cover the product if it has been electronically or mechanically modified in any way. If the product needs to be modified or adapted in order to comply with applicable technical or safety standards on a national or local level, in any country which is not the country for which the product was originally developed and manufactured, this modification/adaptation shall not be considered a defect in materials or workmanship. This limited warranty does not cover any such modification/adaptation, regardless of whether it was carried out properly or not. Under the terms of this limited warranty, MUSIC Group shall not be held responsible for any cost resulting from such a modification/adaptation.

③ This limited warranty covers only the product hardware. It does not cover technical assistance for hardware or software usage and it does not cover any software products whether or not contained in the product. Any such software is provided “AS IS” unless expressly provided for in any enclosed software limited warranty.

④ This limited warranty is invalid if the factory-applied serial number has been altered or removed from the product.

⑤ Free inspections and maintenance/repair work are expressly excluded from this limited warranty, in particular, if caused by improper handling of the product by the user. This also applies to defects caused by normal wear and tear, in particular, of faders, crossfaders, potentiometers, keys/buttons, guitar strings, illuminants and similar parts.

⑥ Damage/defects caused by the following conditions are not covered by this limited warranty:

- improper handling, neglect or failure to operate the unit in compliance with the instructions given in BEHRINGER user or service manuals;

- connection or operation of the unit in any way that does not comply with the technical or safety regulations applicable in the country where the product is used;
- damage/defects caused by acts of God/Nature (accident, fire, flood, etc) or any other condition that is beyond the control of MUSIC Group.

⑦ Any repair or opening of the unit carried out by unauthorized personnel (user included) will void the limited warranty.

⑧ If an inspection of the product by MUSIC Group shows that the defect in question is not covered by the limited warranty, the inspection costs are payable by the customer.

⑨ Products which do not meet the terms of this limited warranty will be repaired exclusively at the buyer’s expense. MUSIC Group or its authorized service center will inform the buyer of any such circumstance. If the buyer fails to submit a written repair order within 6 weeks after notification, MUSIC Group will return the unit C.O.D. with a separate invoice for freight and packing. Such costs will also be invoiced separately when the buyer has sent in a written repair order.

⑩ MUSIC Group Authorized Resellers do not sell new products directly in online auctions. Purchases made through an online auction are on a “buyer beware” basis. Online auction confirmations or sales receipts are not accepted for warranty verification and MUSIC Group will not repair or replace any product purchased through an online auction.

§ 5 Warranty transferability

This limited warranty is extended exclusively to the original buyer (customer of authorized reseller) and is not transferable to anyone who may subsequently purchase this product. No other person (reseller, etc.) shall be entitled to give any warranty promise on behalf of MUSIC Group.

§ 6 Claim for damage

Subject only to the operation of mandatory applicable local laws, MUSIC Group shall have no liability to the buyer under this warranty for any consequential or indirect loss or damage of any kind. In no event shall the liability of MUSIC Group under this limited warranty exceed the invoiced value of the product.

§ 7 Limitation of liability

This limited warranty is the complete and exclusive warranty between you and MUSIC Group. It supersedes all other written or oral communications related to this product. MUSIC Group provides no other warranties for this product.

§ 8 Other warranty rights and national law

① This limited warranty does not exclude or limit the buyer’s statutory rights as a consumer in any way.

② The limited warranty regulations mentioned herein are applicable unless they constitute an infringement of applicable mandatory local laws.

③ This warranty does not detract from the seller’s obligations in regard to any lack of conformity of the product and any hidden defect.

§ 9 Amendment

Warranty service conditions are subject to change without notice. For the latest warranty terms and conditions and additional information regarding MUSIC Group’s limited warranty, please see complete details online at behringer.com.

* MUSIC Group Macao Commercial Offshore Limited of Rue de Pequim No. 202-A, Macau Finance Centre 9/J, Macau, including all MUSIC Group companies

1. Introduction

If you want to operate a loudspeaker system, which consists of several loudspeakers covering different frequency bands, then you naturally have to work with suitably differentiated input signals for each loudspeaker. To do this you need a frequency crossover which can split the input signal into several frequency bands. A difference should be noted between passive crossovers which are wired between amplifier and speaker, and active systems which are placed before the amplifiers in the signal chain. Multi-way speaker systems can be found almost everywhere today—and not only in stereo systems, but in cinemas, discotheques and concert halls. As customers have become more demanding they can even be found now in such “simple” products as TV sets. Why?

With the same sound pressure, low-frequency sound waves have a much greater amplitude (oscillation range) than high-frequency waves. When a single loudspeaker tries to produce bass and treble frequencies at the same time, a so-called intermodulation distortion will occur. This means that, when the speaker diaphragm is displaced by low frequencies, the treble frequencies seem to be raised in loudness, or lowered when the diaphragm reverses its direction.

We cannot therefore expect a single loudspeaker to reproduce signals, spanning the whole audible frequency spectrum at the same level of quality. If, using a frequency crossover, a loudspeaker only has to reproduce a limited part of the frequency spectrum and it will do so at a greatly increased level of quality—thus producing a more regular frequency response and dispersion pattern.

♦ **This manual first describes the terminology used, so that you can fully understand the SUPER-X PRO and its functions. Please read the manual carefully and keep it for future reference.**

1.1 Before you begin

The BEHRINGER SUPER-X PRO CX2310 was carefully packed in the factory, in order to ensure safe transport. Nevertheless, should the box show signs of damage please check the equipment itself immediately for any signs of external damage.

♦ **If the unit is damaged, please do not return it to us, but notify your dealer and the shipping company immediately, otherwise claims for damage or replacement may not be granted. Shipping claims must be made by the consignee.**

Be sure that there is enough space around the unit for cooling and please do not place the SUPER-X PRO on high-temperature devices such as power amplifiers, etc. to avoid overheating.

♦ **Before connecting the SUPER-X PRO to the mains, please carefully check that your equipment is set to the correct supply voltage!**

The fuse holder on the female mains connector has 3 triangular markings. Two of these triangles are opposite each other. The CX2310 is set to the operating voltage shown next to these markings. It can be set to another voltage by turning the fuse holder through 180°.

CAUTION: this does not apply to export models, which were designed e.g. only for a mains voltage of 115 V!

Connection to the mains is made by means of a mains cable with an IEC receptacle which complies with the appropriate safety regulations.

♦ **Please note that all units must be grounded properly. For your own safety, you should never remove any ground connectors from electrical devices or power cords or render them inoperative.**

1.2 Online registration

Please register your new BEHRINGER equipment right after your purchase by visiting <http://behringer.com> and read the terms and conditions of our warranty carefully.

Should your BEHRINGER product malfunction, it is our intention to have it repaired as quickly as possible. To arrange for warranty service, please contact the BEHRINGER retailer from whom the equipment was purchased. Should your BEHRINGER dealer not be located in your vicinity, you may directly contact one of our subsidiaries. Corresponding contact information is included in the original equipment packaging (Global Contact Information/European Contact Information). Should your country not be listed, please contact the distributor nearest you. A list of distributors can be found in the support area of our website (<http://behringer.com>).

Registering your purchase and equipment with us helps us process your repair claims more quickly and efficiently.

Thank you for your cooperation!

2. Control Elements

Since the SUPER-X PRO offers a variety of features, we have provided the active controls with suitable light-emitting diodes. These displays help you to keep track of what is happening even in dark stage environments. Additionally, all the switches on the front panel are illuminated and can thus show which functions are presently active. There are two labels in the form of strips, located above the controls. The text of the upper label indicates mono 3-way, and the lower label indicates stereo 2-way mode. The LED's set below these labels show which controls are active in the respective mode of operation.

♦ **On the rear panel, labels above/below the connectors refer to the various crossover modes available. Please make sure that the MODE switch and corresponding connectors are configured properly; otherwise, you could damage your speakers.**

2.1 Stereo 2-way operation with separate subwoofer signal

First, activate the 2-way mode using the MODE switch on the rear panel (switch depressed). The STEREO LED on the front panel above the LOW CUT switch in the second channel lights up.

The LED's above the active control on the front panel then light up. They show you which controls are active for the mode of operation, which you have selected. The functions of these controls can be seen from the second strip label. In stereo operation the functions of both channels are identical, so that the numbers on the overview are shown for only one channel.

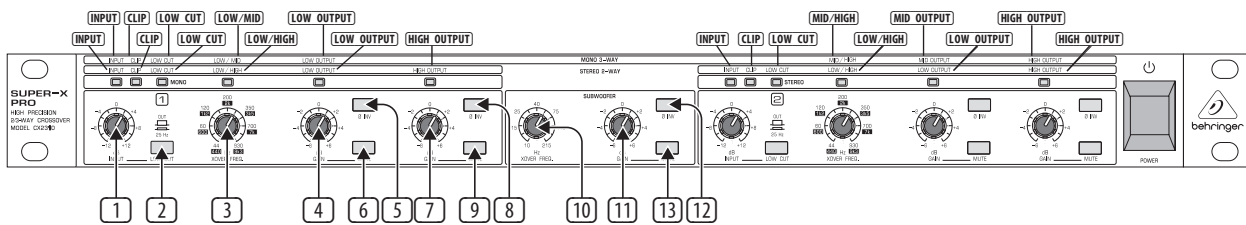


Fig. 2.1: Active control elements on the front panel of the SUPER-X PRO in stereo 2-way operation with separate subwoofer signal

- 1 **INPUT** control. This control adjusts the input gain over the range from -12 to +12 dB.
- 2 **LOW CUT** switch. This switch activates the 25 Hz high-pass filter. It has a side gradient of 12 dB/octave and is used to protect your bass loudspeaker.
- 3 **LOW/HIGH XOVER FREQ.** control. This control governs the crossover frequency between the low and high bands.
- 4 **LOW OUTPUT** control. Controls the output level of the low band over the range from -6 to +6 dB.
- 5 **LOW PHASE INVERT** switch. This switch reverses the polarity of the low output.
- 6 **LOW MUTE** switch. This is used to mute the low band.
- 7 **HIGH OUTPUT** control. This controls the output level of the high band over the range from -6 to +6 dB.
- 8 **HIGH PHASE INVERT** switch. This switch reverses the polarity of the high output.
- 9 **HIGH MUTE** switch. This is used to mute the high band.
- 10 **XOVER FREQ.** control. This control governs the crossover frequency between the low signal and the subwoofer signal (10 to 235 Hz).
- 11 **GAIN** control. This is used to set the subwoofer output volume at the SUBW. OUT output.
- 12 **PHASE INVERT** switch. This switch reverses the polarity of the subwoofer output signal.
- 13 **MUTE** switch. This mutes the subwoofer output signal.

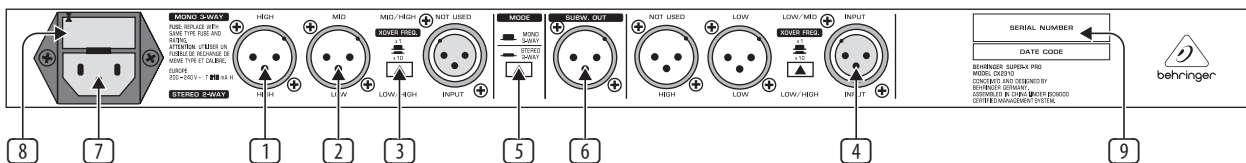


Fig. 2.2: Active control elements and connections on the rear panel of the SUPER-X PRO in stereo 2-way operation with separate subwoofer signal

- 1 **HIGH OUTPUT** connectors. These are the balanced XLR connectors for the high band output signal.
- 2 **LOW OUTPUT** connectors. These are the balanced XLR connectors for the low band output signal.
- 3 **XOVER FREQ.** switch. These switches are used to switch between the control ranges on the front panel LOW/HIGH XOVER FREQ. control. The range is either 44 to 930 Hz or 440 Hz to 9.3 kHz.
- 4 **INPUT** connectors. These are the balanced XLR connectors for the input signal.
- 5 **MODE** switch. In stereo 2-way operation the switch must be depressed. Please refer to the text on the rear panel of the equipment.
- ♦ **Never activate the MODE and XOVER FREQ. switches without having first switched off the equipment. Switching between these while the equipment is in use produces heavy interference noise which could damage the loudspeakers or the system.**
- 6 **SUBW. OUT** connector. This is the balanced XLR output for the mono subwoofer signal. This signal is constant in mono and stereo mode and provides an additional means of providing 2- and 3-way operation (see chapter 3.5).
- 7 **IEC-RECEPTACLE.** This is the mains connection of the SUPER-X PRO. A suitable mains cable is included with the equipment.
- 8 **FUSE HOLDER /VOLTAGE SELECTOR.** Before connecting the equipment to the mains supply, please check that the voltage display conforms with your mains voltage supply. When replacing the fuse, make sure you use another one of the same type. With many units the fuse holder can be set in one of two positions, in order to switch between 230 V and 115 V. Please note: if you wish to operate a unit outside Europe, then a stronger fuse must be used.
- 9 **SERIAL NUMBER.** Please take the time to complete and return the warranty card within 14 days of the date of purchase, otherwise you will lose the right to the extended warranty. Or just use our online-registration (behringer.com).

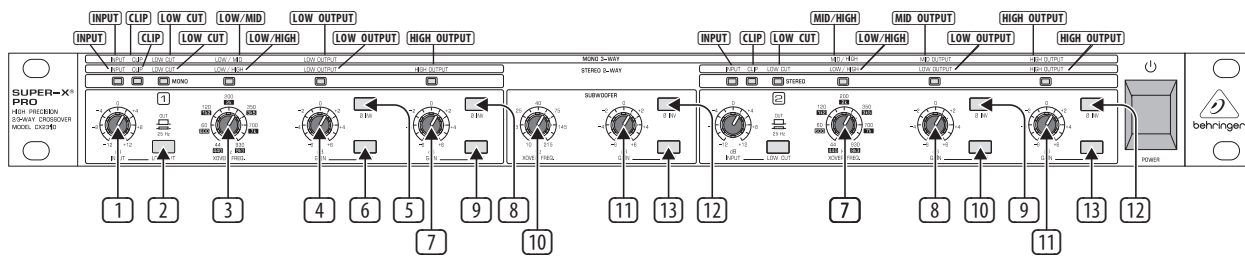


Fig. 2.3: Active control elements on the front panel of the SUPER-X PRO in mono 3-way operation with separate subwoofer signal

2.2 Mono 3-way operation with separate subwoofer signal

First activate mono 3-way mode using the MODE switch on the rear panel (switch released). The MONO LED on the front panel above the LOW CUT switch lights up.

Then the LED's above the active control on the front panel light up. They show which controls are active for the mode of operation, which you have selected. The text on the first label shows the functions of these controls.

- 1 **INPUT** control. This control adjusts the input gain from -12 to +12 dB.
- 2 **LOW CUT** switch. This switch activates the 25 Hz high pass filter.
- 3 **LOW/MID XOVER FREQ.** control. This control governs the crossover frequency between the low and middle bands.
- 4 **LOW OUTPUT** control. This controls the output level of the low band over the range -6 to +6 dB.
- 5 **LOW PHASE INVERT** switch. This switch is used to reverse the polarity of the low output.
- 6 **LOW MUTE** switch. This is used to mute the low band.

- 7 **MID/HIGH XOVER FREQ.** control. This control governs the crossover frequency between the mid and high bands.
- 8 **MID OUTPUT** control. This is used to control the output level of the mid band over the range -6 to +6 dB.
- 9 **MID PHASE INVERT** switch. This reverses the polarity of the mid output.
- 10 **MID MUTE** switch. This is used to mute the mid band.
- 11 **HIGH OUTPUT** control. This controls the output level of the high band over the range from -6 to +6 dB.
- 12 **HIGH PHASE INVERT** switch. This reverses the polarity of the high output.
- 13 **HIGH MUTE** switch. This is used to mute the high band.
- 14 **XOVER FREQ.** control. This control governs the crossover frequency between the low signal and the subwoofer signal.
- 15 **GAIN** control. This sets the subwoofer output volume level at the SUBW.OUT output.
- 16 **PHASE INVERT** switch. This switch is used to reverse the polarity of the subwoofer output signal.
- 17 **MUTE** switch. This is used to mute the subwoofer output signal.

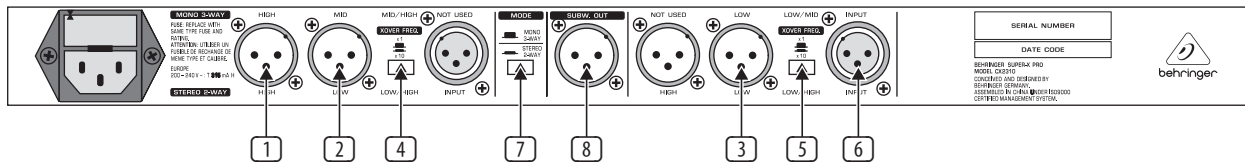


Fig. 2.4: Active control elements and connections on the rear panel of the SUPER-X PRO in mono 3-way operation with separate subwoofer signal

- 1 **HIGH OUTPUT** connector. This is the balanced XLR connector for the high output signal.
- 2 **MID OUTPUT** connector. This is the balanced XLR connector for the mid output signal.
- 3 **LOW OUTPUT** connector. This is the balanced XLR connector for the low output signal.
- 4 **XOVER FREQ.** switch. This is used to switch between the control ranges of the front panel MID/HIGH XOVER FREQ. control. The range is either 44 to 930 Hz or 440 Hz to 9.3 kHz.
- 5 **XOVER FREQ.** switch. This is used to switch between the control ranges of the front panel LOW/MID XOVER FREQ. control. The range is either 44 to 930 Hz or 440 Hz to 9.3 kHz.
- 6 **INPUT** connector. This is the balanced XLR connector for the input signal.
- 7 **MODE** switch. This must be de-activated when in mono 3-way operation.
 - ◆ Never activate the **MODE** and **XOVER FREQ.** switches without having first switched off the equipment. Switching between these whilst the equipment is in use produces heavy interference noise which could damage the loudspeakers or the system.
- 8 **SUBW. OUT** connector. This is the output for the mono subwoofer signal. This signal remains constant in mono and stereo mode and offers an additional way of providing 2-way and 3-way operation (see chapter 3.5).

EN 3. Applications

You will need some tools to help set up the SUPER-X PRO to its optimal configuration. To set up the crossover frequency you need to know which frequency range a loudspeaker stack covers, over which range the sound energy is linearly transmitted, and where reductions or increases in the frequency response occur. In addition, every room has different size and quality characteristics. These strongly influence the sound response, since resonances and reflections in the different frequency ranges can also lead to reductions or increases in the sound picture. You will need suitable equipment in order to be able to recognize and compensate for these features.

3.1 Tools

You will need a high-grade microphone for making measurements. This should have a frequency response that should be as linear as possible (e.g. the BEHRINGER measurement microphone ECM8000) and at least linear over the range from 90 Hz and 15 kHz. Place the microphone about 5 m. in front of the speaker system and between the diaphragms of the two frequency bands you wish to measure. When using a measuring microphone to set the levels for the individual frequency bands and the crossover frequencies, you should only operate one loudspeaker stack. For optimal settings you will usually need to reposition the microphone between two successive measurements. When used in combination with a measuring microphone and a generator producing pink noise via an input into the P.A. mixing console, an analyzer will show the sound energy distribution over the individual frequency bands (usually in 1/3 of an octave). The BEHRINGER ULTRA-CURVE PRO DSP8024 equalizer/analyzer is the ideal tool for this application.

When listening to the overall sound of your system, you should walk around in the audience area and try to detect resonance frequencies or cancellations. The sound should be optimized for the position where most of the audience will be gathered, without however neglecting other areas. This often means that the system must be operated in mono. Whenever you use technical aids such as analyzers, measuring microphones, etc., you should check the desired results with your own ears.

♦ **BEHRINGER accepts no responsibility for any damage or destruction of loudspeakers arising from improper or incorrect use of the SUPER-X PRO and in particular from actions which are in contravention with the clearly stated procedures given in this manual.**

3.2 Setting the input and output levels

Both inputs offer a gain or loss of up to 12 dB. Normally, the output level on the mixing console and the input sensitivity of the amplifiers are identical, i.e. 0 dB at the mixing console corresponds with 0 dB at the amplifiers. This means that there is full control over the amplifiers. In this case the SUPER-X PRO should have no effect on the system level and all input and output level settings should be set at 0 dB. Where e.g. a home recording or disco console is being used with an operating level of -10 dBV but the amplifiers need +4 dBu for complete control, then an additional gain of 12 dB must be provided between them. In this case the INPUT control of the SUPER-X PRO should be set to the maximum.

The output levels of the single bands can be raised/lowered by as much as 6 dB. To achieve a linear frequency response in the system, all output levels should be adjusted with the help of an analyzer. To check the crossover frequencies and levels, mute all outputs except for one, and play back pink noise over the system at an appropriate volume level. When you now switch on the adjacent band, the level measured around the crossover frequency should go up by 3 dB. Repeat this process for all crossover frequencies.

3.3 Correcting problems

Check the entire frequency response of the system. Rooms have quite an impact on the frequency response of speaker systems, due to resonance and various reflections, so you cannot expect to achieve a linear frequency response right from the start. To achieve this, you need an equalizer such as the ULTRA-CURVE PRO DSP8024 or the ULTRA-GRAPH GEQ3102. Look for drop-outs around the crossover frequencies! If the frequency response is very irregular, then it can make sense to grade adjust it using the frequency crossover, before using an equalizer (EQ). The errors in the crossover frequency must then be as far as possible corrected using the EQ.

If the loudspeaker diaphragms in a multi-way system are not exactly aligned along a vertical axis, the varying distances between the sound source and the listener result in phase errors and cancellations (also known as the "comb filter effect"). Particularly in the higher frequencies it is important, due to the shorter wavelengths, to position the diaphragms above each other and not next to each other. The various types of construction used in individual systems (horns, bass reflex cabinets etc.) still give rise to run time differences, even where the front sides of all systems are aligned vertically above each other. In this case a run time correction must be made by electronic means. This can be done by using a delay function. Run time differences can be compensated by delaying the frequency bands over a range of milliseconds. This helps avoid loss of sound quality, particularly in the high tone ranges.

♦ **Runtime correction is not the same as phase correction. If a speaker system has the same run times then it also has the same phases (unless the polarity of a cable has been reversed). However the opposite is not necessarily true.**

3.4 Setting the crossover frequencies

The frequency range from which the crossover frequencies can be selected, can be one of two ranges—from 44 to 930 Hz and from 440 Hz to 9.3 kHz. To set the crossover frequencies, please first read the manufacturers' specifications for the individual loudspeaker components. To use the capacity of your system at its best you should set up the crossover frequencies in accordance with the frequency diagrams on the individual loudspeaker boxes. Further, the crossovers should not lie on peaks or drop-outs. Look for a range with the flattest possible curve. If folded bass horns are being used, then the length of the horn path must also be taken into account, since the run time displacements arising from differing long paths can also have a negative effect on the frequency development (see chapter 3.3).

♦ **Never operate loudspeakers or horn drivers below the limiting frequency specified by the manufacturer!**

3.5 SUBWOOFER output

To achieve a very loud and deep bass playback the SUPER-X PRO has an additional mono subwoofer output for 2-way and 3-way operation. In this sense the CX2310 is a stereo 2-way + mono 1-way or mono 4-way frequency crossover. The subwoofer signal is mono, since people cannot sense the location of lower frequencies. Another reason is that combining all bass signals into a single signal produces an excellent effect. This is because two bass speaker boxes combined together produce 3 dB more sound pressure than if they were separated from each other by a small distance. The increased pressure is due to the speakers producing a single wave front. With four loudspeaker boxes the increase is 6 dB. The reason here is the spherical shape of the expanding low-frequency sound waves. Bass boxes which are separate from each other can mutually disrupt each other where their sound waves meet (what happens here can be easily imagined if you throw two stones into water—first separately and then stuck together).

4. Audio Connections

As a standard, the BEHRINGER SUPER-X PRO CX2310 is equipped with electronically servo-balanced inputs and outputs. The circuit design features automatic hum suppression for balanced signals and so ensures trouble-free operation, even at the highest operating levels. Externally induced mains hum, etc. can therefore be effectively suppressed. The automatic servo-function recognizes the presence of unbalanced connectors and adjusts the nominal level internally to avoid level differences between the input and output signals (6-dB correction).

⚠ Please ensure that only qualified persons install and operate the SUPER-X PRO. During installation and operation the user must have sufficient electrical contact to earth. Electrostatic charges might affect the operation of the unit.

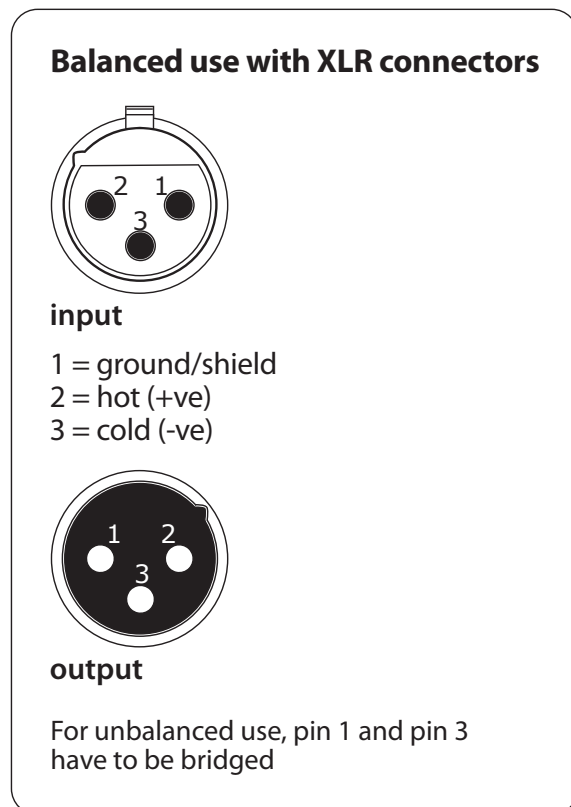
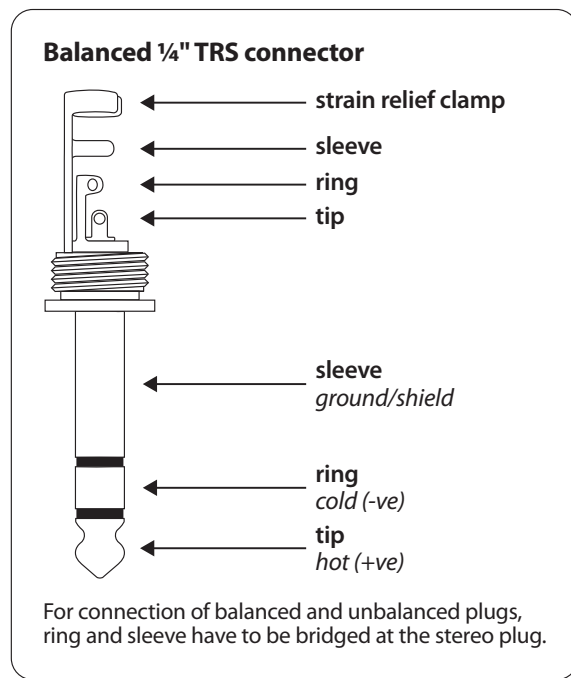
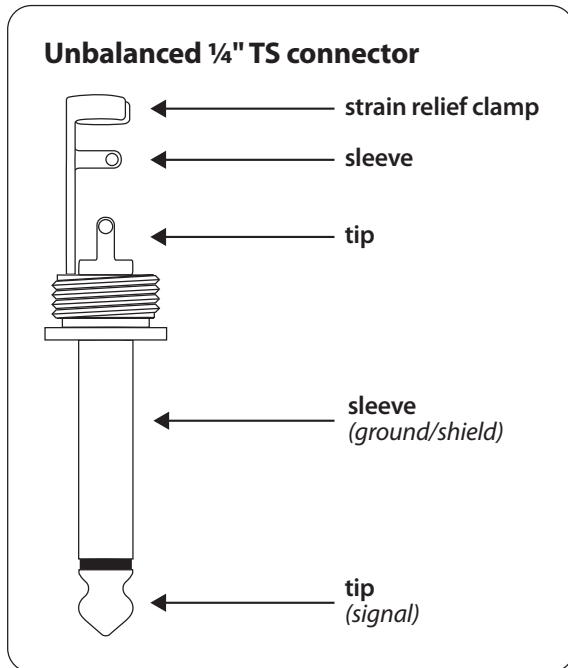


Fig. 4.1: Different plug types

EN 5. Specifications

Inputs

Connectors	XLR
Type	Electronically servo-balanced, HF filtered
Impedance	balanced >50 kOhm, unbalanced >25 kOhm
Max. Input level	+22 dBu typical, balanced or unbalanced
CMRR	>40 dB, typical >55 dB at 1 kHz

Outputs

Connectors	XLR
Type	Electronically servo-balanced, HF filtered
Impedance	balanced 60 Ohm, unbalanced 30 Ohm
Max. Output level	+20 dBm balanced/unbalanced

Performance

Bandwidth	20 Hz to 20 kHz, +0/-0.5 dB	
Frequency response	<5 Hz to >60 kHz, +0/-3 dB	
Signal to noise	Ref.: +4 dBu, 20 Hz to 20 kHz, unweighted	
Low output	Stereo-Mode: >93 dB	Mono-Mode: >93 dB
Mid output	>95 dB	
High output	>91 dB	
Interchannel crosstalk	High to Low: High to Mid: Mid to Low:	<93 dB <94 dB <95 dB

Crossover

Filter-Type	Linkwitz-Riley, 24 dB/octave, state-variable	
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Mono Mode Frequencies

	x1	x10
Low/High	44 to 930 Hz	440 Hz to 9.3 kHz
Low/Mid	44 to 930 Hz	440 Hz to 9.3 kHz
Mid/High		440 Hz to 9.3 kHz

Stereo Mode Frequencies

	x1	x10
Low/High	44 to 930 Hz	440 Hz to 9.3 kHz

Power Supply

Mains voltage

USA/Canada	120 V~, 60 Hz
U.K./Australia	240 V~, 50 Hz
Europe	230 V~, 50 Hz
General Export Model	100 - 120 V~, 200 - 240 V~, 50 - 60 Hz
Power consumption	<17 W

Fuse

UL	100 - 120 V~: T 630 mA H
Europe	200 - 240 V~: T 315 mA H
JP	90 - 110 V~: T 630 mA H
Mains connection	Standard IEC receptacle

Physical/Weight

Dimensions	approx. 1 ¾ x 19 x 8 ½" 44.5 x 482.6 x 217 mm
Net Weight	2.3 kg
Shipping Weight	3.4 kg

BEHRINGER is constantly striving to maintain the highest professional standards. As a result of these efforts, modifications may be made from time to time to existing products without prior notice. Specifications and appearance may differ from those listed or illustrated.



We Hear You