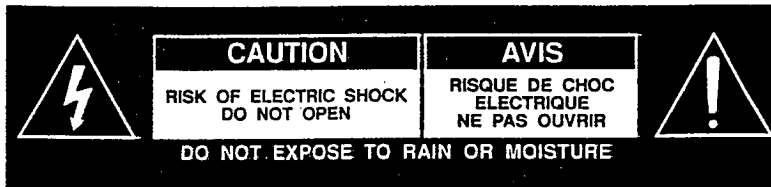


# MODEL 120XP

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## SUBHARMONIC SYNTHESIZER

**dbx**<sup>®</sup>  
OPERATION MANUAL



**CAUTION:** TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

**Warning:** TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.



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. Read the manual.

Manufactured under one or more of the following U.S. patents: 3,377,792; 3,681,618; 3,714,462; 3,789,143; 4,097,767; 4,329,598; 4,403,199; 4,409,500; 4,425,551; 4,473,795. Other patents pending.

This dbx-branded product has been manufactured by AKG Acoustics, Inc.

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This manual is part number ~~96008-000-05C~~ 18-2034

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**dbx**

dbx Professional Products

a division of AKG Acoustics, Inc.

1525 Alvarado Street, San Leandro, CA 94577 USA

Telephone (1) 510/351-3500 Fax: (1) 510/351-1001

# IMPORTANT SAFETY INSTRUCTIONS

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

**Retain Instructions:** The safety and operation instructions should be retained for future reference.

**Heed Warnings:** All warnings on the appliance and in the operating instructions should be adhered to.

**Follow Instructions:** All operation and user instructions should be followed.

**Water and Moisture:** The appliance should not be used near water (e.g., near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.).

**Ventilation:** The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

**Heat:** The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

**Power Sources:** The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

**Grounding or Polarization:** Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

**Power-Cord Protection:** Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

**Cleaning:** The appliance should be cleaned only as recommended by the manufacturer.

**Non-use Periods:** The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

**Object and Liquid Entry:** Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

**Damage Requiring Service:** The appliance should be serviced by qualified service personnel when:

- The power supply cord or the plug has been damaged; or
- Objects have fallen, or liquid has been spilled into the appliance; or
- The appliance has been exposed to rain; or
- The appliance does not appear to operate normally or exhibits a marked change in performance; or
- The appliance has been dropped, or the enclosure damaged.

**Servicing:** The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

**The Appliance should be used only with a cart or stand that is recommended by the manufacturer.**

## Safety Instructions (European)

### **Notice For U.K. Customers If Your Unit Is Equipped With A Power Cord.**

#### **WARNING: THIS APPLIANCE MUST BE EARTHED.**

The cores in the mains lead are coloured in accordance with the following code:

GREEN and YELLOW - Earth      BLUE - Neutral      BROWN - Live

As colours of the cores in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The core which is coloured green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, (⊕), or coloured green, or green and yellow.

The core which is coloured blue must be connected to the terminal marked N or coloured black.

The core which is coloured brown must be connected to the terminal marked L or coloured red.



The power cord is terminated in a CEE7/7 plug (Continental Europe). The green/yellow wire is connected directly to the unit's chassis. If you need to change the plug and if you are qualified to do so, refer to the table below.

**WARNING:** If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously.

CONDUCTOR		WIRE COLOR	
		Normal	Alt
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GREEN-YELLOW	GREEN

**AC Power Cord Color Coding**

## Safety Instructions (German)

Gerät nur an der am Leistungsschild vermerkten Spannung und Stromart betreiben.

Sicherungen nur durch solche, gleicher Stromstärke und gleichen Abschaltverhaltens ersetzen. Sicherungen nie überbrücken.

Jedwede Beschädigung des Netzkabels vermeiden. Netzkabel nicht knicken oder quetschen. Beim Abziehen des Netzkabels den Stecker und nicht das Kabel erfassen. Beschädigte Netzkabel sofort auswechseln.

Gerät und Netzkabel keinen übertriebenen mechanischen Beanspruchungen aussetzen.

Um Berührung gefährlicher elektrischer Spannungen zu vermeiden, darf das Gerät nicht geöffnet werden. Im Fall von Betriebsstörungen darf das Gerät nur von befugten Servicestellen instandgesetzt werden. Im Gerät befinden sich keine, durch den Benutzer reparierbare Teile.

Zur Vermeidung von elektrischen Schlägen und Feuer ist das Gerät vor Nässe zu schützen. Eindringen von Feuchtigkeit und Flüssigkeiten in das Gerät vermeiden.

Bei Betriebsstörungen bzw. nach Eindringen von Flüssigkeiten oder anderen Gegenständen, das Gerät sofort vom Netz trennen und eine qualifizierte Servicestelle kontaktieren.

## Safety Instructions (French)

On s'assurera toujours que la tension et la nature du courant utilisé correspondent bien à ceux indiqués sur la plaque de l'appareil.

N'utiliser que des fusibles de même intensité et du même principe de mise hors circuit que les fusibles d'origine. Ne jamais shunter les fusibles.

Eviter tout ce qui risque d'endommager le câble seueur. On ne devra ni le plier, ni l'aplatir. Lorsqu'on débranche l'appareil, tirer la fiche et non le câble. Si un câble est endommagé, le remplacer immédiatement.

Ne jamais exposer l'appareil ou le câble à une contrainte mécanique excessive.

Pour éviter tout contact avec une tension électrique dangereuse, on n'ouvrira jamais l'appareil. En cas de dysfonctionnement, l'appareil ne peut être réparé que dans un atelier autorisé. Aucun élément de cet appareil ne peut être réparé par l'utilisateur.

Pour éviter les risques de décharge électrique et d'incendie, protéger l'appareil de l'humidité. Eviter toute pénétration d'humidité ou fr liquide dans l'appareil.

En cas de dysfonctionnement ou si un liquide ou tout autre objet a pénétré dans l'appareil couper aussitôt l'appareil de son alimentation et s'adresser à un point de service après-vente autorisé.

## Safety Instructions (Spanish)

Hacer funcionar el aparato sólo con la tensión y clase de corriente señaladas en la placa indicadora de características.

Reemplazar los fusibles sólo por otros de la misma intensidad de corriente y sistema de desconexión. No poner nunca los fusibles en puente.

Proteger el cable de alimentación contra toda clase de daños. No doblar o apretar el cable. Al desenchufar, asir el enchufe y no el cable. Sustituir inmediatamente cables dañados.

No someter el aparato y el cable de alimentación a esfuerzo mecánico excesivo.

Para evitar el contacto con tensiones eléctricas peligrosas, el aparato no debe abrirse. En caso de producirse fallos de funcionamiento, debe ser reparado sólo por talleres de servicio autorizados. En el aparato no se encuentra ninguna pieza que pudiera ser reparada por el usuario.

Para evitar descargas eléctricas e incendios, el aparato debe protegerse contra la humedad, impidiendo que penetren ésta o líquidos en el mismo.

En caso de producirse fallos de funcionamiento como consecuencia de la penetración de líquidos u otros objetos en el aparato, hay que desconectarlo inmediatamente de la red y ponerse en contacto con un taller de servicio autorizado.

## Safety Instructions (Italian)

Far funzionare l'apparecchio solo con la tensione e il tipo di corrente indicati sulla targa riportante i dati sulle prestazioni.

Sostituire i dispositivi di protezione (valvole, fusibili ecc.) solo con dispositivi aventi lo stesso amperaggio e lo stesso comportamento di interruzione. Non cavallottare mai i dispositivi di protezione.

Evitare qualsiasi danno al cavo di collegamento alla rete. Non piegare o schiacciare il cavo. Per staccare il cavo, tirare la presa e mai il cavo. Sostituire subito i cavi danneggiati.

Non esporre l'apparecchio e il cavo ad esagerate sollecitazioni meccaniche.

Per evitare il contatto con le tensioni elettriche pericolose, l'apparecchio non deve venir aperto. In caso di anomalie di funzionamento l'apparecchio deve venir riparato solo da centri di servizio autorizzati. Nell'apparecchio non si trovano parti che possano essere riparate dall'utente.

Per evitare scosse elettriche o incendi, l'apparecchio va protetto dall'umidità. Evitare che umidità o liquidi entrino nell'apparecchio.

In caso di anomalie di funzionamento rispettivamente dopo la penetrazione di liquidi o oggetti nell'apparecchio, staccare immediatamente l'apparecchio dalla rete e contattare un centro di servizio qualificato.

## QUICK SETUP

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To get your unit up and running as quickly as possible, do the following steps. For more detailed information, refer to the specified pages.

- Unpack and Inspect the 120XP Package.** Page 1
- Connect the 120XP to Your System.** Page 5
- Set Levels and Controls as Needed.** Page 2

## INSPECTION

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### 1. Unpack and Inspect the 120XP package.

Your 120XP was carefully packed at the factory in a protective carton. Nonetheless, be sure to examine the unit and the carton for any signs of damage that may have occurred during shipping. If obvious physical damage is noticed contact the carrier immediately to make a damage claim. We suggest saving the shipping carton and packing materials for safely transporting the unit in the future. If you are not going to save it, please recycle it. Verify that the 120XP package contains (1) 120XP unit and (1) Operation Manual (including a Registration Card).

## INTRODUCTION

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Congratulations on choosing the dbx Model 120XP Subharmonic Synthesizer. The 120XP has been specifically optimized to enhance bass audio material for use in a variety of professional applications, including nightclub and dance DJ mixing, theatre and film sound, music recording, live music performance, broadcasting, and aerobics. The 120XP's two separate bands of subharmonic synthesis provide the best combination of smoothness and control, and the independent Low Frequency Boost circuit is designed to get the most out of high-performance low frequency speaker systems.

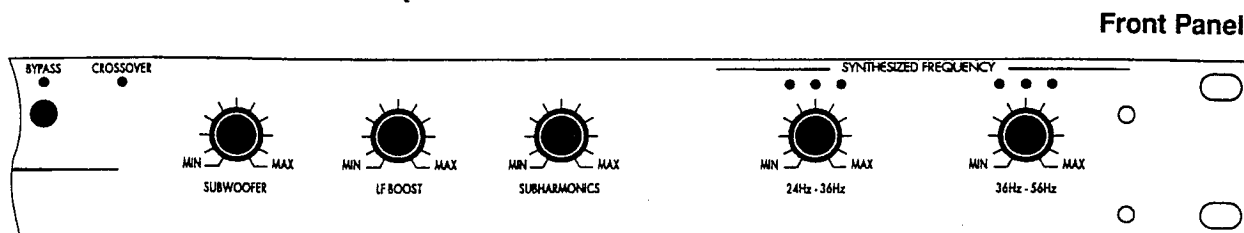
Flexible system interfacing is achieved by providing main outputs which can be FULL RANGE (including synthesis) or High Frequency ONLY, along with a separate subwoofer output with its own level control.

The 120XP's patented subharmonic synthesis process builds a synthesized waveform using the waveshapes of the original bass material, producing a new Waveform Modeled™ bass note, exactly one octave below the bass in the original audio. Unlike other attempts at bass synthesis, the dbx process produces smooth, musical low frequencies that don't interfere with mid and high-band information, even when maximum synthesis and boost are applied. The result is a low-end punch that people really feel, even at system levels that won't destroy sound equipment or damage hearing.

### Features

- Individual controls for two ranges of subharmonic frequencies plus master synthesis level control
- Separate Low Frequency Boost circuit
- Separate Subwoofer Output
- Front panel LEDs that show BYPASS status and CROSSOVER status
- LF Synthesis LED indicators
- Patented circuitry insures that mid and high frequencies are not affected
- Built-in crossover with choice of 80Hz or 120Hz crossover point
- Balanced inputs and 1/4" jacks for all connections

## OPERATING CONTROLS



**BYPASS Button and BYPASS/Power LED:** Press this button in to enable the 120XP's BYPASS. In BYPASS, the incoming signal is not augmented or boosted in the bass. However, the crossover, if used, is still active (and can be adjusted with the SUBWOOFER control). The BYPASS feature is especially useful for making comparisons between synthesized and unsynthesized signals.

The BYPASS LED turns green when 120XP processing is bypassed. This LED turns red when 120XP processing is active.

**CROSSOVER LED:** This green LED indicates when the active crossover is selected (i.e., the rear panel OUTPUT switch is set to HF ONLY). In this case, the main outputs (CHANNEL 1 and CHANNEL 2) contain only the high frequency portion of the signal while the low frequency portion appears at the mono SUBWOOFER OUTPUT.

**SUBWOOFER Control:** This control sets the level of the low frequency crossover signal (original program plus synthesized harmonics) coming out of the SUBWOOFER jack.

Note that if you turn the control up too far, the bass may become unnaturally heavy.

The SUBWOOFER control works most effectively when the rear panel OUTPUT switch is set to HF ONLY and you are using a subwoofer.

**LF BOOST Control:** This control effectively and smoothly evens out the total apparent bass output of the 120XP. Use LF BOOST to gently boost the bass on each channel (after the subharmonics are summed in) to fill in the "gap" between the synthesized very low bass (below 55Hz) and the mid-bass of the original program.

Be careful of using excessive boost, especially if the SUBHARMONICS control is past its midpoint, or if you are using a speaker equalizer or any other bass tone control.

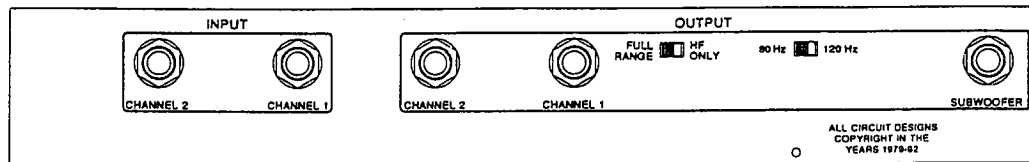
LF BOOST can be used with or without Subharmonic Synthesis.

**SUBHARMONICS Control:** This control, along with the individual frequency trims, sets the amount of synthesized bass that the 120XP adds to the program. Its effect depends not only on where it is set between MINimum and MAXimum but also on how much bass is present in the original signal to be augmented. Note that the effect will be most apparent in systems with subwoofers or other speakers that effectively reproduce very low bass tones.

**SYNTHESIZED FREQUENCY LEDs:** These LEDs show the amount of new signal being generated by the 120XP in response to the original program that may be added in. There is one row of LEDs (green, yellow, red) for each synthesized band, where the red LED represents the greatest amount of synthesized bass.

**24Hz-36Hz and 36Hz-56Hz Level Controls:** These controls individually let you customize the amount of the respective synthesized frequencies to be added in, tuning the ultimate bass response of your system to taste. For example, if the sound is too woofy or growly, try turning down the 36Hz - 56Hz level. If your woofers are bottoming out (making a ticking, popping sound), or fuses are blowing, or your amp is clipping, try turning down the 24Hz - 36Hz level. You may find that a setting produces fine results in one room, but produces too much boominess in another. If this occurs, adjust the controls as needed, (e.g., increase one or the other of the band levels). Experimentation will pay off with smooth, full, deeply extended bass. Remember, you are not selecting a frequency. You are controlling the overall level of each band.

## Rear Panel



**INPUT Jacks (CHANNEL 1 and 2):** Use 1/4" phone plugs to connect these inputs to your source. The 120XP's INPUT jacks accept either balanced or unbalanced signals. Nominal input level is +0dBu and clipping level is +20dBu.

**OUTPUT Jacks (CHANNEL 1 and 2):** The OUTPUT jacks accept 1/4" phone plugs. Nominal output signal level is +0dBu into 600Ω, and typical maximum output signal level is +20dBu into 600Ω. The outputs are single-ended, Tip Hot.

**FULL RANGE/HF ONLY OUTPUT Switch:** Use this switch to select the signal sent to the outputs.

For normal operation (i.e., your system has no subwoofer/extra amplifier), leave this switch in the "FULL RANGE" position. This sends the "full-range" (20Hz - 20kHz) signal out of the main OUTPUT jacks (CHANNEL 1 and CHANNEL 2).

For biamped subwoofer applications, move the switch to the "HF ONLY" position. In this mode the signal gets divided between the main OUTPUT jacks (CHANNEL 1 and CHANNEL 2) and the mono SUBWOOFER OUTPUT jack.

**SUBWOOFER Output Jack:** This Output sends to your subwoofer amplifier the low bass from 20Hz up to the crossover frequency (80Hz or 120Hz). Use a 1/4" phone plug to connect this output to your subwoofer amplifier. The output is single-ended, Tip Hot.

**80Hz/120Hz Crossover Frequency Switch:** This switch sets the crossover frequency between the SUBWOOFER OUTPUT and the HF ONLY outputs.

**AC Cord:** Plug into mains power. Note that the 120XP does not have a power button. It is recommended that the 120XP be "On" at all times. Power consumption is low. If you do not plan to use the 120XP for an extended period of time, unplug it.

**WARNING:** Be sure to verify both your actual line voltage and the voltage for which your Model 120XP was wired, as indicated on the rear panel of your unit. Connection to an inappropriate power source may result in extensive damage which is not covered by the warranty.



## OPERATING NOTES

### Using the 120XP

#### Setting Levels

Do not use the 120XP at its extreme settings with loud volume levels, especially with digitally-produced audio.

Very low bass frequencies call for considerable amplifier power and for loudspeakers that can take this considerable power. However, the 120XP not only can boost the bass that is present in the original program, but can simultaneously generate sizable amounts of new bass at even lower frequencies. If not used with care, the 120XP can damage system components (e.g., woofers can be readily damaged by very loud bass, intentional or otherwise). dbx cannot take responsibility for any damage to the amplifier, loudspeakers, or other stereo components that results from using the 120XP.

When installing the 120XP (or any other component in your system), reduce the system's output level. We also recommend that all the 120XP front panel controls be set fully counterclockwise to minimum (MIN). When installation is complete, carefully return the system to normal listening levels and adjust the 120XP to taste.

During normal usage, if clipping occurs, lower the volume immediately and decrease the 120XP settings.

**Note:** Never try to reproduce non-musical sounds like artillery explosions or gunfire with the 120XP.

### Avoiding Transients

Any sharp noises from your sound system — turn-on thumps, switching pops, tuner bursts, record ticks, dropped tonearms or microphones — are hard on your speakers, and since the 120XP amplifies and augments all low-frequency information, extra caution is called for at all times. To be safe, turn the power amp On last and Off first, and always keep the main volume control low or Off when turning the system or any of its components On.

To further reduce the chance of dangerous transients, make sure your system is operating at its optimum performance. We recommend you have all switches, buttons and knobs on your equipment cleaned by a qualified person (especially if any rasp or crackle is present). If you are using a turntable, check that the turntable cueing is gentle.

### Speaker Placement

For systems with multiple speakers, we recommend placing each speaker so that the distances from the center of its woofer to the three nearest boundaries (e.g., walls and floor) are *as different as possible* (unless the speaker manufacturer specifically advises otherwise). These distances are measured along the speaker-cabinet sides, not in a straight line. When these distances are the same, the bass response of most speakers is roughest, with peaks and dips more than 10dB apart over just a few notes. Putting a conventional box-shaped speaker woofer-down in a corner will make it sound very bassy (and yes, a few of the low notes *are* being strongly emphasized), but for evenness of bass it's the worst spot available.

The formula for calculating maximally different distances a, b, and c and least bumpy speaker placement is:  $a/b = b/c$ , or  $b^2 = ac$ , where a, b, and c are never equal.

The same acoustical laws apply to your listening position (as well as the room itself): the smoothest bass will result when the distances from your head to the three nearest boundaries are as different as possible. In the same manner, the boomiest rooms have all three dimensions the same, and the smoothest have them maximally different.

If you do reposition your speakers, you should also reset any output level controls on the back of the speaker cabinets (e.g., for tweeters, midranges, etc.). Many speakers offer a slight HF or MF boost with these controls all the way up, and the new increase in bass might be better balanced by such a maximum setting.

The 120XP is not intended only as a device to create wall crumbling low-end. Judicious use with a pair of full range two-way speakers (e.g., a cabinet with a 12" LF driver and an HF horn) can create the sense that a pair of speakers with 15" woofers is being used (Of course you can still loosen plaster: front loaded 18" subwoofers can sound like horn-loaded subwoofers and so on.) An additional benefit of improving the sound of smaller speakers is that a pair of smaller speakers and one 120XP is more portable than a pair of two larger speakers.

### Turntable Feedback and Low Frequency Rumble

If you are using the 120XP with a turntable, the increased levels of bass may make your turntable system more susceptible to feedback, wherein the turntable base, platter, cartridge/stylus, and/or the disc itself actually pick up and replay bass from the speakers. One symptom is an increasing, flapping rumble as you turn the volume up (more severely, the system begins to howl) that disappears or is markedly reduced when the tonearm is lifted off the record. The cure is to isolate the turntable, making it immune to low-frequency vibrations (including footsteps). Note that any LF rumble in the system from turntables, air conditioning, through-mics, etc., will be boosted by the 120XP.

To reduce turntable feedback, begin by locating the turntable and the speakers as far apart as practical. Next, short of replacing the turntable, since some turntables are much more prone to feedback than others, place some vibration-damping material under the base. This can be dense foam, supermarket sponges, or special shock-absorber feet designed specifically for this problem. A massive base or table under the turntable may "decouple" it from the cases (e.g., a springy floor that transmits bass from speaker back to record player irrespective of how cushioned the latter



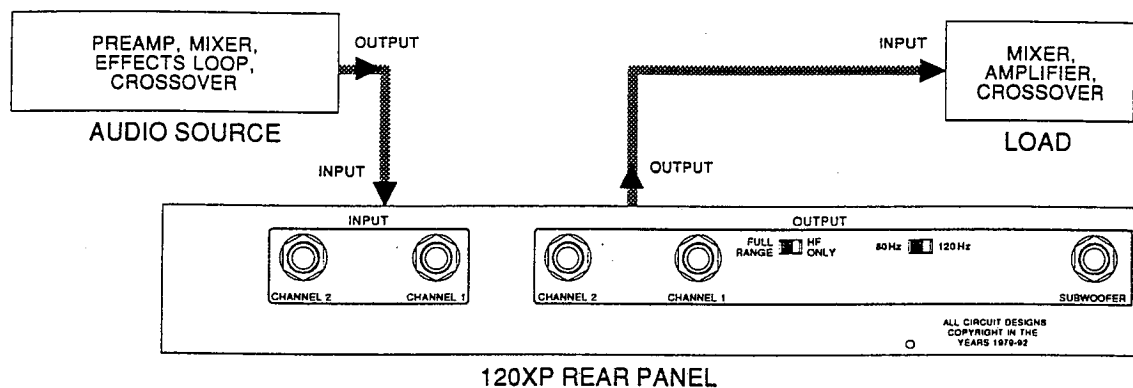
is, may be addressed by mounting the turntable on large stiff furniture-type coil springs or by putting up a wall-mounted shelf for the turntable).

**Note for CD players:** High levels of bass can cause CD players to skip. It is a good idea to locate CD players away from low-end drivers and loudspeakers and shock mount them.

## CONNECTING THE 120XP TO YOUR SYSTEM

### Basic Connection

The 120XP can be used with any line-level device (e.g., mixing consoles, preamps). For more specific cabling information, refer to Installation Considerations, on the following page.



For all connections, refer to the following steps:

1. Turn Off all equipment before making any connections.
2. Mount the 120XP in a 1U Rack Space (optional).

The 120XP requires one rack space (height) and 1 rack space (width). It can be mounted above or below anything that doesn't generate excessive heat, since it requires no special ventilation. Ambient temperatures should not exceed 113°F (45°C) when equipment is powered.

**Note:** Avoid over-tightening of rackmounting screws as this could damage the front panel.

**Caution:** Never remove the cover. There are no user-serviceable parts inside, and you run the risk of an electric shock.

3. Make connections via ¼" phone jacks according to your requirements.

**SUBWOOFER Operation:** Set the OUTPUT switch to HF ONLY. Then connect main speaker amplification to CHANNEL 1 and 2 OUTPUT Jacks and subwoofer amplification to the mono SUBWOOFER Jack.

**Operation without a SUBWOOFER:** Set the OUTPUT switch to FULL RANGE and connect the amplification for the main speakers to CHANNEL 1 and CHANNEL 2 OUTPUT Jacks.

Typical patch points include: a mixer's channel or subgroup inserts when using the 120XP on individual instruments or tracks; the mixer's main outputs when mixing; an instrument preamp's effects loop when using the 120XP for guitar or bass; main outs of a submixer (i.e., keyboard mixer) as the signal is sent to main mixer. The 120XP can be used either before or after an external electronic crossover. When using a chain of processors, the 120XP should generally be placed as far down the chain as possible. We recommend you use common sense and experiment with different setups to see which one provides the best results for your needs.

**4. Plug in the AC power cable to power On the unit.**

**Note:** Check the line voltage. The 120XP is shipped for 115V or 230V, 50Hz or 60Hz operation. Refer to the unit's rear panel to verify your unit's precise line voltage.

**INSTALLATION CONSIDERATIONS**

**Input/Output Cable Configurations**

The 120XP has 18.5kΩ, balanced inputs and is designed for nominal +0dBu levels; inputs and outputs are tip/ring/sleeve phone jacks. The 120XP can be used with either balanced or unbalanced sources. The outputs are single-ended, capable of driving 600Ω to +20dBu.

A balanced line is defined as two-conductor shielded cable with the two center conductors carrying the same signal but of opposite polarity with respect to ground. An unbalanced line is generally a single-conductor shielded cable with the center conductor carrying the signal and the shield at ground potential.

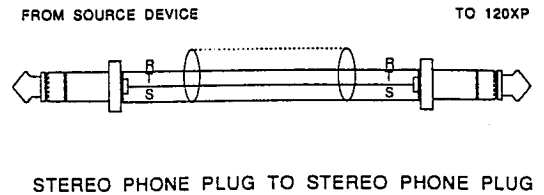
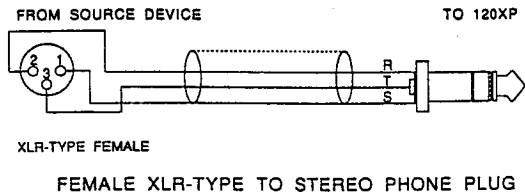
**Input Cable Configurations**

The 120XP will accept either balanced or unbalanced sources as long as the cables are wired according to the following figures. Refer to the type of operation and type of plug you are using.

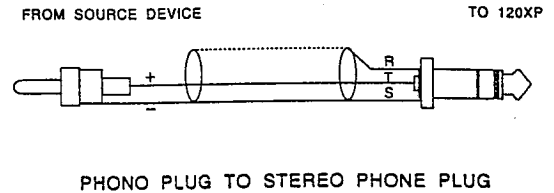
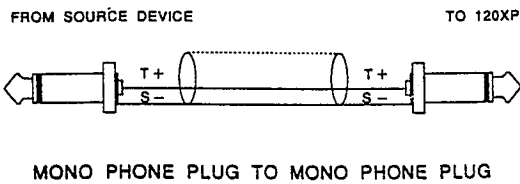
The input impedance is > 18.5kΩ, allowing operation from virtually any source. Nominal operating level is +0dBu, and will provide excellent performance with levels from -10dBu to +4dBu. The input jacks are 1/4" phone jacks, Tip Hot.

**Note:** In an emergency, 1/4" Mono Phone cables will work. Connect the Sleeve to the cable's shield.

**Note:** For maximum hum rejection with a balanced source, avoid common grounding at the 120XP's input and output. The best starting point is to ground the shield of the input cable at the source device (leaving it unconnected at the 120XP).



**Input Connections (Balanced Operation)**



**Input Connections (Unbalanced Operation)**

**Output Cable Configurations**

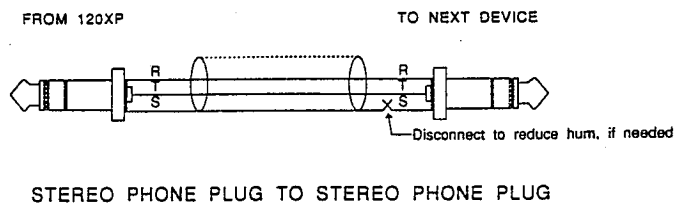
The 120XP will drive either balanced or unbalanced loads as long as the cables are wired according to the following figures. Refer to the type of operation and type of connector you are using.

The output impedance is 47Ω, allowing operation with virtually any load. Nominal operating level is +0dBu into 600Ω, and will provide excellent performance with levels from -10dBu to +4dBu. The output jacks (including SUBWOOFER outputs) are 1/4" phone jacks, Tip Hot.

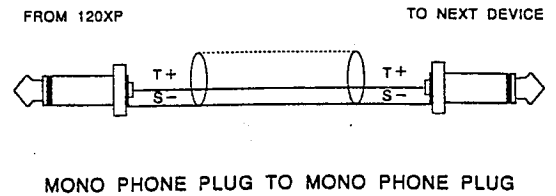
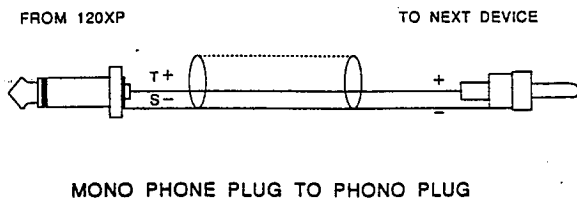
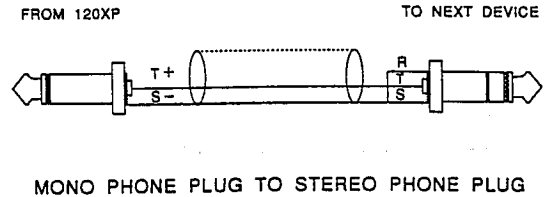
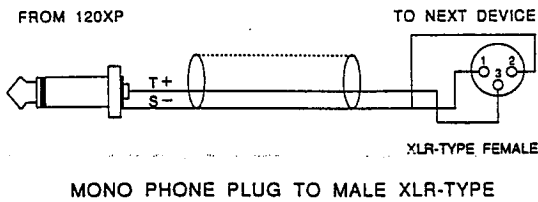
**Note:** There is a 10Ω resistor inside the 120XP connecting circuit ground to chassis ground.

If using 1/4" mono phone plugs at the output, the 120XP will be grounded to the load device. This can cause a ground loop.

By using 1/4" balanced phone plugs (assuming the load is balanced), the grounds of both the 120XP and the load can be isolated to reduce hum; leave the shield unconnected at the load device.



**Output Connections (Balanced Operation)**



**Output Connections (Unbalanced Operation)**

## TECHNICAL SUPPORT, FACTORY SERVICE

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### Technical Support

The 120XP is an all-solid-state product with components chosen for high performance and excellent reliability. Each 120XP is tested, burned in and calibrated at the factory and should require no internal adjustment of any type throughout the life of the unit. We recommend that your 120XP be returned to the factory only after referring to the manual and consulting Customer Service.

Our phone number, fax number and address are listed on the inside front cover. When you contact dbx Customer Service, be prepared to accurately describe the problem. Know the serial number of your unit — this is printed on a sticker attached to the rear panel.

**Note:** Please refer to the terms of your Limited Two-Year Standard Warranty, which extends to the first end-user. After expiration of the warranty, a reasonable charge will be made for parts, labor, and packing if you choose to use the factory service facility. In all cases, you are responsible for transportation charges to the factory. dbx will pay return shipping if the unit is still under warranty.

**Shipping Instructions:** Use the original packing material if it is available. Mark the package with the name of the shipper, and with these words in red: DELICATE INSTRUMENT, FRAGILE! Insure the package properly. Ship pre-paid, not collect. Do not ship parcel post.

### Registration Card and User Feedback

We appreciate your feedback. After you have an opportunity to use your new 120XP, please complete the Registration Card (located in the back of this manual), detach it from the manual and return it.

## SPECIFICATIONS

Note: 0dBV = 1.0Vrms; 0dBu = 0.775Vrms

Specifications are subject to change.

<b>Frequency Response</b> No Synthesis Full-Range Mode	25Hz - 20kHz, $\pm 0.5$ dB 20Hz - 90kHz, +0, -3dB (referenced to 1kHz)
<b>Input Impedance</b>	Balanced or Unbalanced $\geq 18.5k\Omega$
<b>Maximum Input Level</b>	+20dBu
<b>Output Impedance</b>	47 $\Omega$
<b>Maximum Output Level</b>	+20dBm
<b>Connector Type</b>	1/4" TRS Phone Jack
<b>THD</b> (no synthesis, either output)	0.007%
<b>Intermodulation Distortion</b> (no synthesis, either output)	(IMD) IHF or SMPTE 0.005%
<b>Equivalent Input Noise</b>	-90dBu, Unweighted
<b>Output Noise</b>	-85dBu, Controls Set Halfway; or -93dBu A-Weighted, All Controls Max.
<b>Dynamic Range</b>	110dB
<b>Synthesis Frequency Range</b>	26Hz - 56Hz (From 54Hz - 110Hz Input Signal)
<b>Crossover</b>	12dB/Octave Highpass (-3dB @ 80Hz or 120Hz) 6dB/Octave Derived Lowpass; Phase-Coherent (Unity-Sum)
<b>Operating Voltage</b>	DO: 90 - 125VAC, 50/60Hz EU: 180 - 250VAC, 50/60Hz
<b>Operating Temperature</b>	0°C to 45°C (32°F to 113°F)
<b>Dimensions (H x W x D)</b>	1.75" x 19" x 4" (4.44cm x 48.25cm x 10.16cm)
<b>Rack Space</b>	1 Rack Unit
<b>Weight</b>	Net Weight: 3.35 lbs (1.51 kg) Shipping Weight: 4.94 lbs (2.23 kg)
<b>Warranty</b>	dbx Standard Two-Year Warranty

## SCHEMATICS

Schematics for the 120XP are provided on the following pages. The 120XP Assembly Drawing, as well as the unit's Circuit Description, Parts List and Performance Evaluation, are provided in the 120XP Service Manual, available from our Customer Service Department for a nominal fee.

**Registration Card**

Model # \_\_\_\_\_ Serial # \_\_\_\_\_ Purchase Date \_\_\_\_\_

Your name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_ Telephone \_\_\_\_\_

Street \_\_\_\_\_

City, State, Mail Code (Zip), Country \_\_\_\_\_

Purchased from \_\_\_\_\_ Price \_\_\_\_\_

Nature of your product application \_\_\_\_\_

Please rate the following from 1 to 10 (where 10 is the best possible rating and 1 is the lowest):

Performance \_\_\_\_\_ Ease of use \_\_\_\_\_ Documentation \_\_\_\_\_ Cosmetics \_\_\_\_\_ Serviceability \_\_\_\_\_

Comments \_\_\_\_\_

Please list the magazines you read most often, in order of priority \_\_\_\_\_

## WARRANTY

### United States Warranty

#### Limited Warranty

This warranty is valid only for the original purchaser and only in the United States. We warrant dbx products against defects in material or workmanship for a period of two years from the date of original purchase for use, and agree to repair or, at our option, replace any defective item, except external power transformers, without charge for either parts or labor.

**IMPORTANT:** This warranty does not cover damage resulting from accident, misuse or abuse, lack of reasonable care, the affixing of any attachment not provided with the product, loss of parts, or connecting the product to any but the specified receptacles. This warranty is void unless service or repairs are performed by an authorized service center. No responsibility is assumed for any special, incidental or consequential damages. However, the limitation of any right or remedy shall not be effective where such is prohibited or restricted by law.

Simply take or ship your dbx product prepaid to our service department. Be sure to include your sales slip as proof of purchase date. (We will not repair transit damage under the no-charge terms of this warranty.) dbx will pay return shipping.

**Note:** No other warranty, written or oral is authorized for dbx products.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow the exclusion of limitations of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above exclusion and limitations may not apply to you.

### International Warranty

#### Bedingungen

dbx gewährt 2 Jahre Garantie ab Verkaufsdatum auf nachweisbare Material- und Fabrikationsfehler (ausgenommen externe Netzgeräte). Der Garantieanspruch erlischt bei unsachgemäßer Handhabung, elektrischer oder mechanischer Beschädigung durch mißbräuchliche Anwendung sowie bei unsachgemäßer Reparatur durch nichtautorisierte Werkstätten. Zur Inanspruchnahme der angeführten Garantieleistung ist der Nachweis da Kaufes (ordentliche Rechnung da Verkäufers erforderlich). Transport- und Portospesen, welche aus der Einsendung des Gerätes zur Garantiereparatur erwachsen, können von dbx nicht übernommen werden, das Risiko der Zusendung trägt der Kunde. Die Garantie wird ausschließlich für den ursprünglichen Käufer geleistet.

#### Warranty Conditions

dbx warrants dbx products (except for external power transformers) against evident defects in material and workmanship for a period of two years from the date of original purchase for use. This warranty does not cover damage resulting from misuse or abuse, or lack of reasonable care, and inadequate repairs performed by unauthorized service centers. Performance of repairs or replacements under this warranty is subject to proof of purchase. Shipment of the defective item for repair under this warranty will be at the customer's own risk and expense. This warranty is valid for the original purchaser only.

#### Conditions de garantie

Pour toute mise en œuvre de garantie ou de service après-vente, vous devez vous adresser à votre revendeur. Notre société assure au revendeur le remplacement gratuit des pièces détachées nécessaires à la réparation pendant deux ans, à partir de la date de votre facture, sauf en cas de non respect des prescriptions d'utilisation ou lorsqu'une cause étrangère à l'appareil est responsable de la défaillance. Cette garantie n'est pas appliquée pour les transformateurs external. Les dispositions stipulées ci-dessus ne sont pas exclusives du bénéfice au profit de l'acheteur de la garantie légale pour défaut et vice cachés qui s'applique, en tout état de cause, dans les conditions des articles 1641 et suivants du Code Civil.

#### Condizioni di garanzia

L'dbx presta garanzia per due anni dalla data della vendita per difetti di materiale e fabbricazione che possono essere provati. Il diritto di garanzia cessa in caso di manipolazione impropria, danneggiamento elettrico o meccanico attraverso l'uso non appropriato e riparazione inesperta eseguita da officine non autorizzate. E' indispensabile, per la prestazione della garanzia, presentare la carta di garanzia debitamente riempita dal rivenditore autorizzato e la fattura di vendita. Spese di trasporto che risultano dall'invio dell'impianto per la riparazione in garanzia, non possono essere assunte dall'dbx: l'invio è a rischio e pericolo del cliente. La garanzia verrà data solo al primo acquirente.

#### Condiciones de garantía

dbx concede dos años de garantía (menos fuentes de poder exteriores) por defectos comprobables de material o de fabricación a partir de la fecha de venta. El derecho de garantía caduca en caso de procederse a una manipulación inadecuada en caso de producirse daño eléctrico o mecánico por uso indebido, así como también en caso de reparaciones inadecuadas por parte de talleres no autorizados. La prestación de la garantía está sujeta a la presentación de la factura de compra. dbx no asume ningún gasto de transporte o correo incurrido por el envío del aparato defectuoso para la reparación bajo garantía; el riesgo del envío ha de ser asumido por el cliente. La garantía se concede única y exclusivamente al comprador original.