

dbx

BX-3MkII
POWER AMPLIFIER

OPERATING MANUAL

Congratulations upon your purchase of the dbx BX-3MkII Power Amplifier. Your new amplifier is completely unique in design and execution, as well as unsurpassed in overall sonic performance and power output capability. Incorporating four independent power amps, the BX-3MkII functions as a stereo amplifier, a 3 channel amplifier, or a 4 channel amplifier, and up to four pairs of speaker systems can be driven at a time. Prior to use, we recommend that you read this manual once through carefully to understand the features and capabilities of your BX-3MkII Power Amplifier.

WARNING

**TO PREVENT FIRE OR SHOCK HAZARD,
DO NOT EXPOSE THIS COMPONENT
TO RAIN OR MOISTURE.**

This triangle, which appears on your component, alerts you to the presence of uninsulated dangerous voltage inside the enclosure—voltage that may be sufficient to constitute a risk of shock.



This triangle also appears on your component, and it alerts you to important operating and maintenance instructions in this accompanying literature.

CAUTION

To Reduce Further the Risk of Shock, Do Not Remove the Cover or Back. There Are No User-Serviceable Parts Inside; Refer All Servicing to Qualified Personnel.

WARRANTY and FACTORY SERVICE

All dbx products are covered by a limited warranty (warranties for products purchased outside the U.S.A. are valid only in the country of purchase and the U.S.A.). For details, consult your warranty/registration card or your dealer/distributor.

The dbx Customer Service Dept. will help you use your new product. For answers to questions and information beyond what's in this manual, write to:

dbx
707 E. Evelyn Ave.
Sunnyvale, CA., 94086 U.S.A.
Attn: Customer Service

You also may call (408) 648-7939 during business hours (U.S.A. Pacific Standard time).

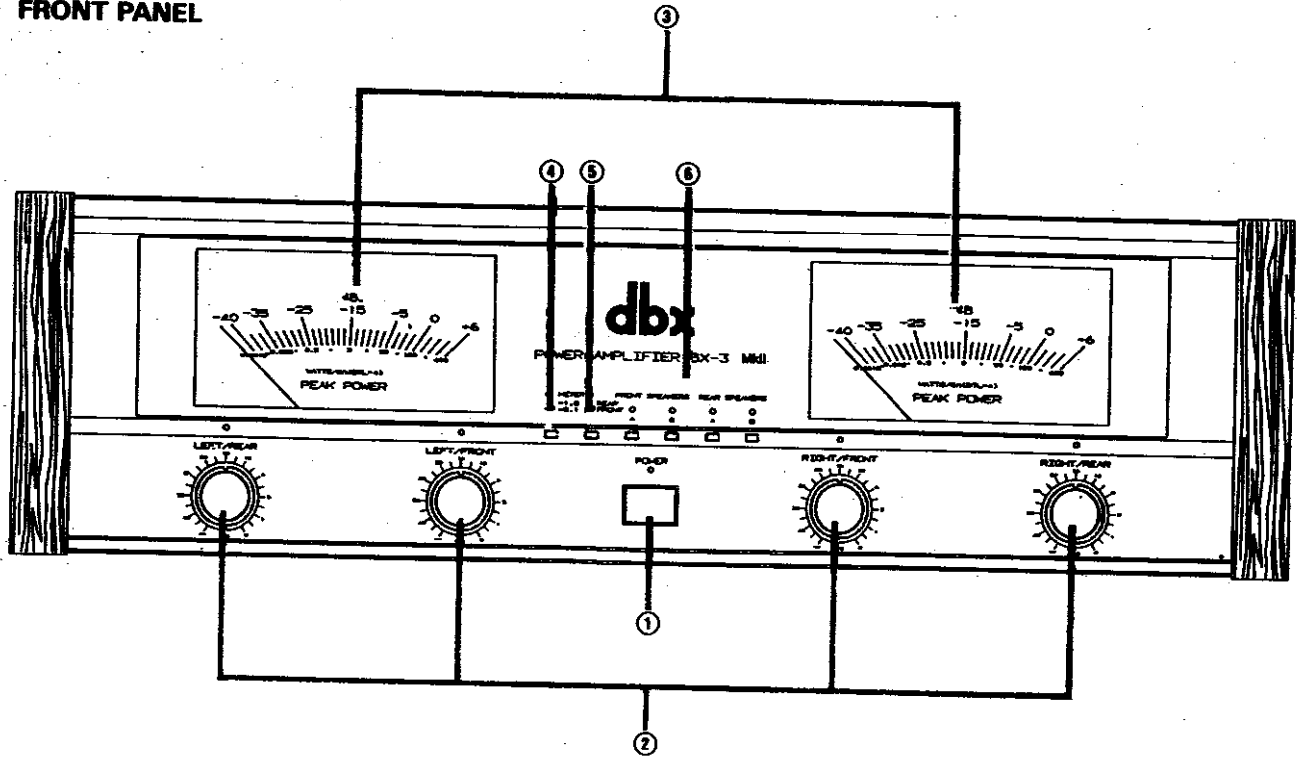
Should problems arise, consult your dealer or distributor. If it becomes necessary to have your equipment serviced at the factory, repack the unit, including a note with a description of the problem and the date of purchase, and send the unit freight prepaid to the above address, marking it Attn: Repairs.

"dbx" is a registered trademark of Carillon Technology Inc., Sunnyvale, CA., U.S.A.

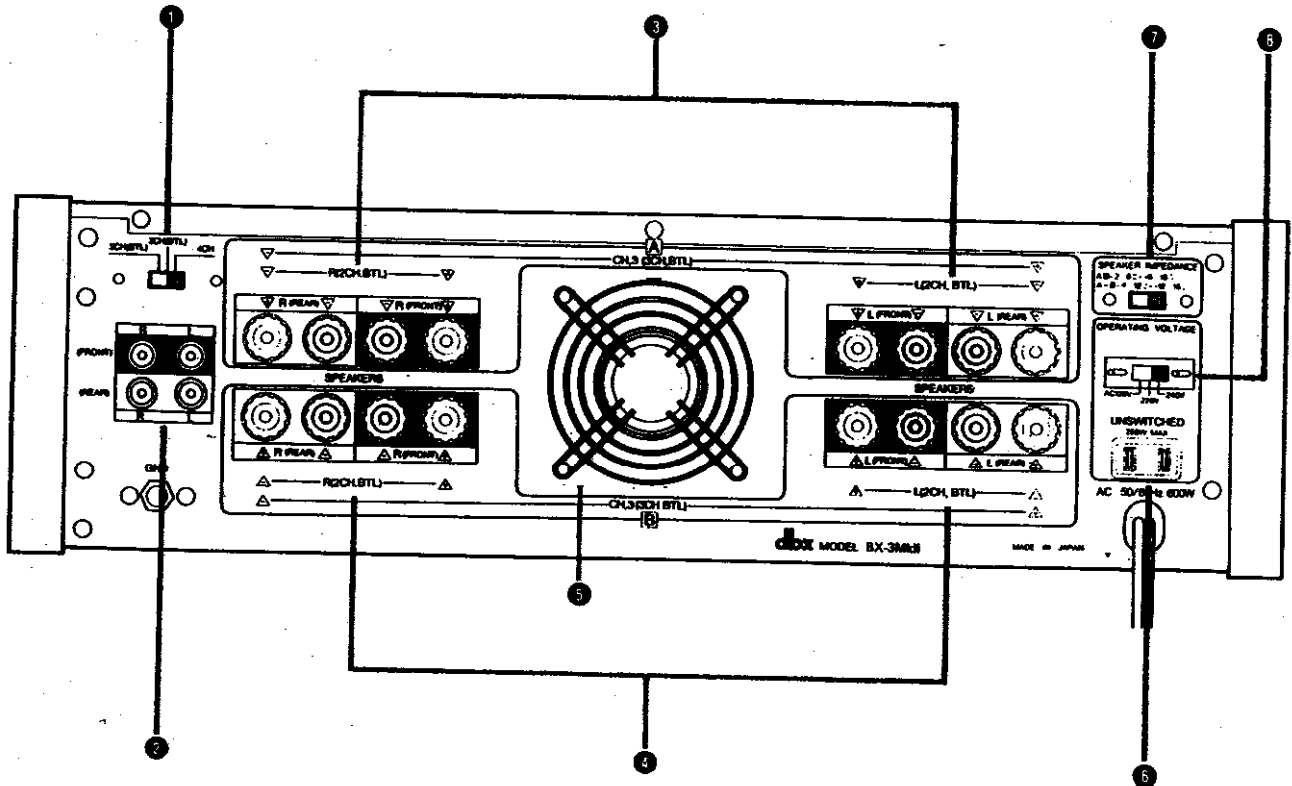
LOCATION AND FUNCTION OF CONTROLS

• Refer to these illustrations while you are reading each section.

FRONT PANEL



REAR PANEL



PRECAUTIONS BEFORE USE

• POWER REQUIREMENT

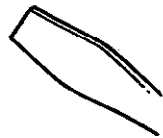
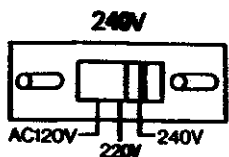
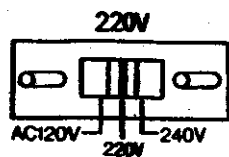
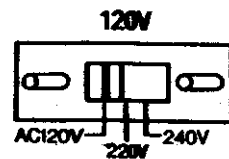
Power requirements for electrical equipment differ from area to area. Ensure that your amplifier meets the power requirements in your area.

120V, 60Hz for U.S.A.
220V, 50Hz for Europe except U.K.
240V, 50Hz for U.K. and Australia.

If the voltage specified in the voltage selector on the rear panel does not conform to the voltage available in your area, change the setting of the voltage selector as follows.

Using a screwdriver, remove the screws holding the cover to the rear panel, and move the selector to the correct position. After changing the setting, replace the cover with the screws.

NOTE: Be sure to disconnect the power cord when changing the setting.



• POWER PLUG

When disconnecting the power cable from the power outlet, be sure to take hold the plug, not the wire. Never handle the power plug with wet hands since you may receive an electric shock. When you do not intend to use the amplifier for a prolonged period of time, keep the power plug disconnected from the power outlet.

• VENTILATION HOLES

The BX-3MkII has the ventilation holes both on the top and the underside to prevent increase of temperature inside the unit. Do not block the ventilation holes with objects over them. Avoid also installing the unit in the area with poor ventilation. Do not put the other component such as a tuner or a pre-amplifier directly upon the BX-3MkII since this may result in not only blocking the ventilation holes but also causing hum or malfunction.

• INSTALLATION

Do not install the unit in the area exposed to direct sunlight, dust, dirt, moisture or humidity. Installation in the location which is susceptible to vibration should be also avoided since this may result in deterioration in performance or malfunction.

• INSIDE THE UNIT

If a hairpin, coin or any other metal object finds its way inside the unit or if water is splashed over the unit, disconnect the power plug from the power outlet immediately and notify your nearest dbx dealer. Continued use may cause trouble or an electric shock.

• NO USER-ADJUSTABLE PARTS INSIDE

Never check nor adjust the parts inside the unit since this may result in trouble or an electric shock. Guarantee will be invalid for malfunction or performance deterioration due to the alteration, modification or substitution other than specified.

FRONT PANEL CONTROLS AND FUNCTIONS

① POWER switch

Pressing this switch causes the AC power to be supplied to the unit. The red LED above the switch will flash until the voltage of each circuit of the unit is stabilized, and then will become steadily illuminated. The lamps in the PEAK POWER Meters (③) will also light up.

② Input Volume Controls

For use in adjusting the incoming signal level. The input level will increase by turning the Input Volume Control clockwise, and will decrease by turning it counterclockwise. Keep the Input Volume Controls turned fully clockwise in the normal operation. The figure below shows the channel controlled by each Input Volume in each mode.

Channel to be controlled in each mode

Input Volume Mode	LEFT/REAR	LEFT/FRONT	RIGHT/FRONT	RIGHT/REAR
4CH MODE	Left/Rear	Left/Front	Right/Front	Right/Rear
3CH MODE	CH.3	Left/Front	Right/Front	—
2CH MODE	—	Left	Right	—

③ PEAK POWER Meters

These meters illuminate to indicate the output level to the speaker systems. They can indicate the peak power of either front speakers or rear speakers in 4CH mode, and the selection is made by the METER Switching button (⑤). For further details about metering in each mode, refer to Section 'CONNECTIONS AND OPERATIONS'.

④ METER $\times 1.0$, $\times 0.1$ —Meter Sensitivity selector

For use in changing the meter sensitivity. Setting the button to $\times 0.1$ position by pressing it causes the meter sensitivity to be increased by ten times for more sensitive metering. In this setting, the actual peak power is 1/10 of the indicated value. The LED will become illuminated when the switch is set to $\times 0.1$ position.

NOTE: When the Meters are set to indicate the peak power level of third channel in 3CH mode, move of the meters become completely the same for both channels since the third channel is in mono-bridged connection.

When in 2CH BTL mode, the indicated values are 1/4 of the actual peak power.

Multiply the indicated value on either meter by four to know the actual peak power.

⑤ METER REAR, FRONT—Meter Switching button

Setting this button to the pressed position causes the PEAK POWER Meters to indicate the output volume to the FRONT speaker systems in 4CH mode. The green LED will become illuminated. Release the button to indicate the output volume to the REAR speaker systems in 4CH mode.

For metering in 2CH BTL mode or 3CH BTL mode, refer to the descriptions in Section 'CONNECTION AND OPERATION'.

⑥ SPEAKERS—Speaker System selectors

Two speaker systems, System A and System B, can be connected to the BX-3MkII for all modes (2, 3, 4CH). These switches choose the System to be used.

Press the FRONT A or B, REAR A or B buttons in accordance with the SPEAKERS terminals to which the speaker system is connected. The red LED above the selected button will become illuminated.

REAR PANEL

② 2CH (BTL), 3CH (BTL), 4CH—Operating Mode selector

This switch chooses the operating mode of the BX-3Mkl. Set the switch to the correct position as follows.

- When driving front speakers together with rear speakers in 4 channel surround mode, or in Dual 2 channel mode, set the switch to 4CH position.
- When driving the speakers in 3 channel mode, i.e. 2 channel plus 1 channel in mono-bridged (BTL) connection for a center woofer, set the switch to 3CH (BTL) position.
- When driving the speakers in 2 channel BTL connection, set the switch to 2CH (BTL) position.

For further informations about the relation between the connection and switch position, refer to Section 'CONNECTION AND OPERATION'.

NOTE: In changing the switch setting, be sure to turn the power off. Never change the setting while the unit is operating.

③ INPUTS—Input connectors

For use in connecting output of the control amplifier. The upper pair is the FRONT R, L inputs and the lower pair is the REAR R, L inputs in 4CH mode (or in Dual 2CH mode). In 3CH mode, FRONT R, L and REAR L connectors are used, and only the FRONT inputs are used in 2CH BTL mode.

④ SPEAKERS—Speaker terminals for System A

These upper four pairs of connectors are for FRONT R, L and REAR R, L of speaker System A.

Speaker connections will be different according to the operating modes. Refer to Section 'CONNECTION AND OPERATION' for further informations about speaker connections.

⑤ SPEAKERS—Speaker terminals for System B

These lower four pairs of connectors are for FRONT R, L and REAR R, L of speaker System B.

Speaker connections will be different according to the output modes. Refer to Section 'CONNECTION AND OPERATION' for further informations about speaker connections.

⑥ Cooling Fan

High level, long time operation of the unit may cause the internal chassis temperatures to be increased. With the internal temperatures over 70°C, this Cooling Fan will be operated automatically to dissipate the heat from the unit and to maintain long term operational reliability. Since it operates very quietly, music reproduction will never be disturbed.

⑦ UNSWITCHED—AC power outlet

On condition that the power cord is connected to an AC wall outlet, the AC power can be supplied to the audio component connected to this outlet, regardless of switching ON/OFF of the POWER button on the front panel. Never connect components where power requirements exceed 250W.

NOTICE: Due to European regulatory standards, the A.C. outlet on the rear panel is connected only in the U.S. and Japanese models.

⑧ SPEAKER IMPEDANCE selector

This selector should be set to the rated impedance of the speaker systems in use. Consulting the operating manual of your speakers, set the selector to the proper position.

For instance, when driving only one set of speakers using 8Ω impedance speakers, set the selector to the right '6-16Ω' position. When driving simultaneously both speaker systems A and B which use 8Ω impedance speakers, set the selector to the left '2-6Ω' position.

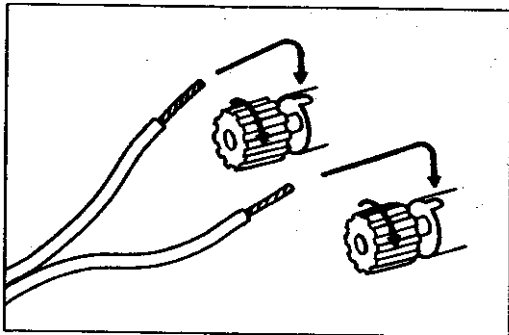
⑨ OPERATING VOLTAGE selector

This is for selecting the power supply voltage. Although it is set at the factory to the voltage of your region, confirm that this selector is set to the proper position prior to connecting the power to the unit.

CONNECTION AND OPERATION

CONNECTION PRECAUTIONS

- **Connection of Speaker cables**
First strand tightly the speaker cable conductors. Loosen the cap of the speaker terminal to be connected, insert the stranded cable end as shown in the Figure below, and then tighten the cap to secure the cable end.



- Each time you connect the cables, be sure to connect properly, checking the right and left channel (L to L and R to R). Also remember that the '+' terminals on the speakers must be connected to '+' terminals of the amplifier, and the '-' terminals on the speakers to the '-' terminals of the amplifier.

NOTE: In 2CH BTL and 3CH BTL mode, connections will become a little more complicated. For further details of these two mode, read the corresponding instructions in this section.

- When connecting, either disconnect the power plug from the power outlet or turn off the power switch.
- Check to see if the **SPEAKER IMPEDANCE** selector is set properly. If it is set improperly, not only full output is not achieved but also abnormal heat may be produced.
- When both speaker System A and B are used simultaneously, be very certain that the total of the speaker impedance is not under 2Ω . Under 2Ω of total speaker impedance, the unit will not operate properly.
- Avoid connecting another speaker system (System B) differently from the System A since this may cause malfunction of the amplifier. Be sure to set up both System A and B in the same connection mode.

I 2 CHANNEL BTL MODE CONNECTION

The BK3Mkl incorporates 4 monaural power amplifiers, and they can be configured into a 2 channel stereo amplifier by binding four output stages into two pairs to drive a 2 channel stereo speaker system. In this connection which is called BTL connection, each channel shall be driven with more than double power output for more powerful, energetic sound reproduction.

- 1) According to the indication printed on the rear panel of the unit, connect the speaker cables between the following terminals.
The unit's upper red 'R (REAR)' terminal and the '-' terminal on the right speaker.
The unit's upper red 'R (FRONT)' terminal and the '+' terminal on the right speaker.
The unit's upper red 'L (REAR)' terminal and the '-' terminal on the left speaker.
The unit's upper red 'L (FRONT)' terminal and the '+' terminal on the left speaker.

NOTE: The INPUTS connectors (2) to be used for this connection are FRONT L and R. This means that L (FRONT) and L (REAR) output stages are combined to drive FRONT L speaker, and R (FRONT) and R (REAR) output stages are combined to drive FRONT R speaker.

- 2) Set the Operating Mode selector to '2CH (BTL)' position. LED indicators on LEFT/FRONT and RIGHT/FRONT volume controls on the front panel (2) will be illuminated.

- 3) Press the Speaker System Selector 'FRONT' A and 'REAR' A (front panel 6). The LEDs above these switches will light up.

NOTE: In this connection, Meter Switching function on the front panel is deactivated, and the move of the Meters will be completely the same in either position of Meter Switching button. Multiply the indicated values on either meter by four to know the actual peak power.

When driving other speakers, use the lower speaker terminals for System B, and connect the cables referring to step 1). Be sure to set up both System A and B in the same connection mode.

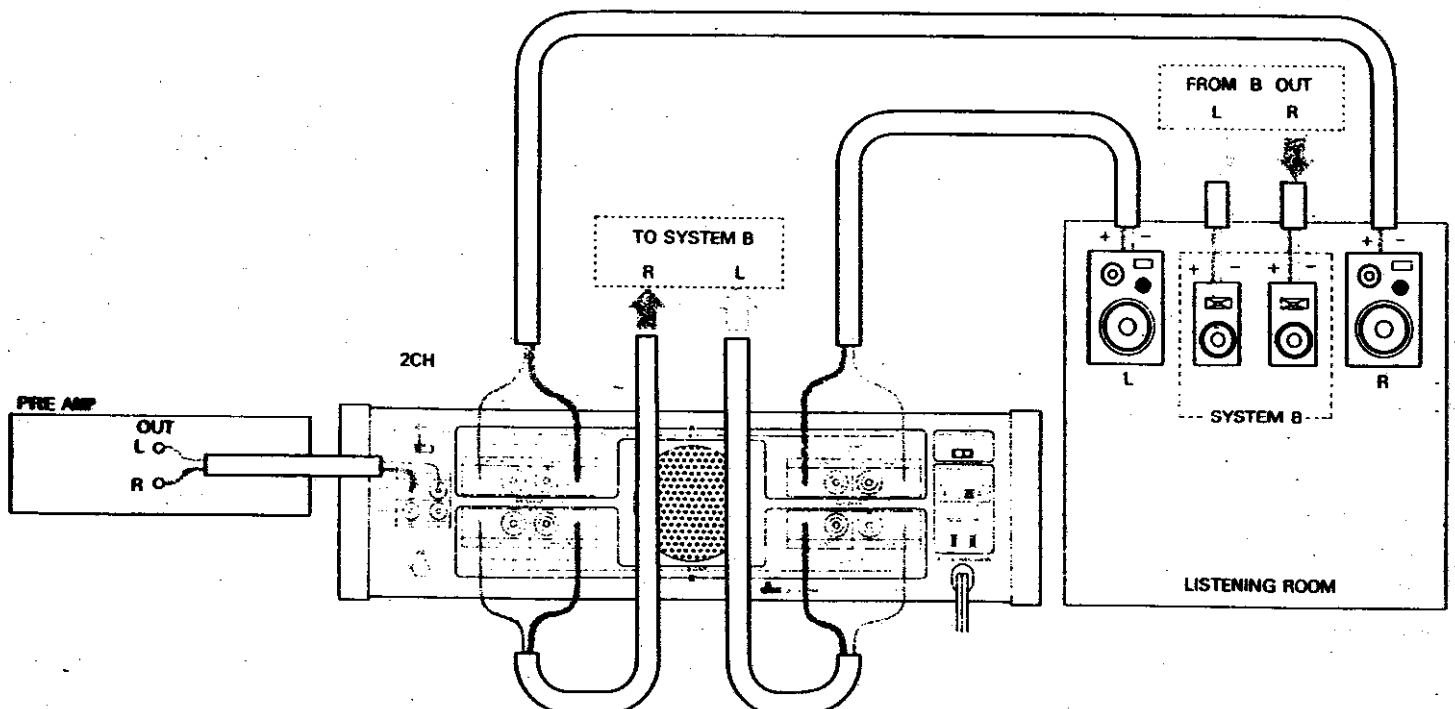
To drive System B, press the Speaker System selector 'FRONT' B and 'REAR' B (front panel 6). The LEDs above these switches will become illuminated.

To drive both systems simultaneously, press all the Speaker System selector switches.

WARNING

Although the sound will be emitted from the speakers with the Operating Mode selector set to 4CH position, this will cause malfunction of the internal protection circuitry. Be sure to set the Operating Mode selector to 2CH(BTL) position in 2CH BTL mode.

When using an external Speaker System Selector unit, the use of the unit which switches polarity '-' only should be avoided since it will damage the amplifiers in 2CH BTL operation. Use the unit which can switch both polarities ('+' and '-').



II 3 CHANNEL BTL MODE CONNECTION

The BX-3MkII incorporates 4 monaural power amplifiers, and they can be configured into 2 channel plus mono-bridged amplifiers to drive 3 channel (2 channel stereo plus one center woofer) speaker system, by performing connections as follows.

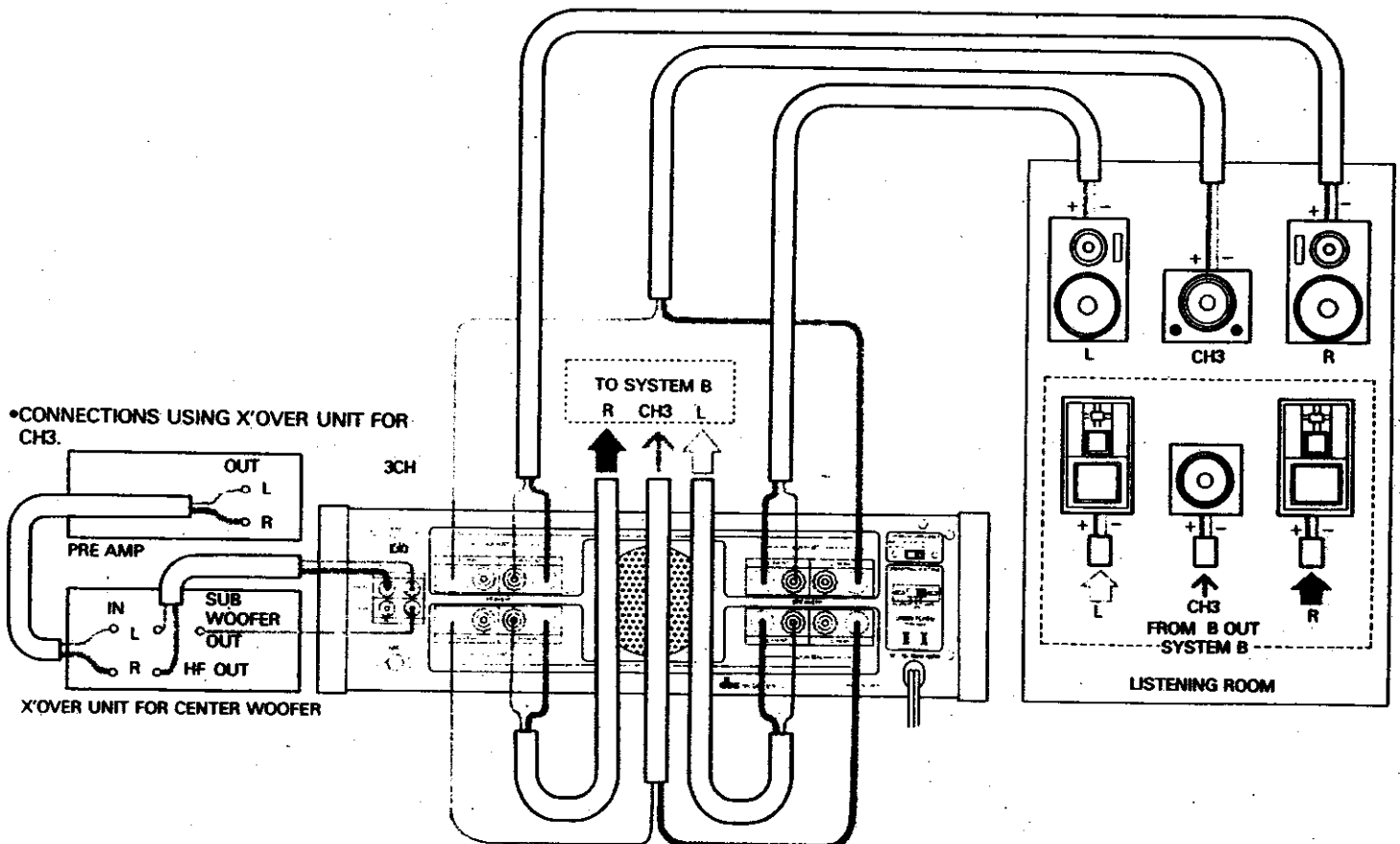
- 1) To set up the 2 channel stereo speaker system, connect the speaker cables from the unit's 'R (FRONT)' terminals and to the right speaker terminals, and from the 'L (FRONT)' terminals and the left speaker terminals, checking the polarity (+ to + and - to -).
- 2) To drive a CH.3 center woofer in the mono-bridged connection, connect the speaker cables between the following terminals. Also consult the connecting indication for 'CH.3 (3CH BTL)' printed on the rear panel.
The unit's upper red 'R (REAR)' terminal and the '-' terminal on the woofer.
The unit's upper red 'L (REAR)' terminal and the '+' terminal on the woofer.
- 3) Set the Operating Mode selector to '3CH (BTL)' position. LED indicators above LEFT/FRONT, RIGHT/FRONT and LEFT/REAR volume controls on the front panel (2) will be illuminated. This means that the CH. 3 center woofer is driven by

the input signal coming via LEFT/REAR input connector. So, the INPUTS connectors (2) to be used for this connection are FRONT R, L and REAR L.

- 4) Press the Speaker System selector 'FRONT' A and 'REAR' A (front panel 6). The LEDs above these switches will light up.
- 5) For metering the level of the 2 channel stereo speaker system, set the Meter Switching button (9) to FRONT position by pressing it. The green LED above the button will light up. For metering the level of CH. 3 center woofer, set the button to REAR position by releasing it.

NOTE: When metering the level of CH. 3, the move of the Meters is completely the same for both channels. Multiply the indicated value on either channel by four to know the actual peak power.

When driving another 3CH BTL system, use the lower speaker terminals for System B, and connect the cables referring to step 1). To drive System B, press the Speaker System selector 'FRONT' B and 'REAR' B (front panel 6). Red LEDs on these switches will become illuminated. To drive both systems simultaneously, press all the Speaker System selector switches.



III 4 CHANNEL MODE CONNECTIONS

i 4 CHANNEL SYSTEM USING FRONT and REAR SPEAKER SYSTEMS

The 4 monaural amplifiers incorporated in the BX-3MkII can be operated independently to drive the FRONT speaker system together with the REAR speaker system in SURROUND mode. Perform the connections in the following procedures.

- 1) First set up the FRONT speaker system. Using the upper speaker terminals, connect the speaker cables between the following connectors, checking the polarity (+ to + and - to -).
The unit's upper 'R (FRONT)' terminals and the right speaker terminals.
The unit's upper 'L (FRONT)' terminals and the left speaker terminals.
- 2) Then set up the REAR speaker system. Using the upper speaker terminals, connect the speaker cables between the following connectors, checking the polarity (+ to + and - to -).
The unit's upper 'R (REAR)' terminals and the right speaker terminals.
The unit's upper 'L (REAR)' terminals and the left speaker terminals.
- 3) Set the Operating Mode selector to '4CH' position. LED indicators above all the Input Volume controls on the front panel (2) will be illuminated.

4) Press the Speaker System selector 'FRONT' A and 'REAR' A (front panel 6). LED indicators above these selectors will be illuminated.

5) For metering the level of the FRONT speaker system, set the Meter Switching button (front panel 5) to FRONT position by pressing it, and for metering the level of the REAR speaker system, set the button to REAR position.

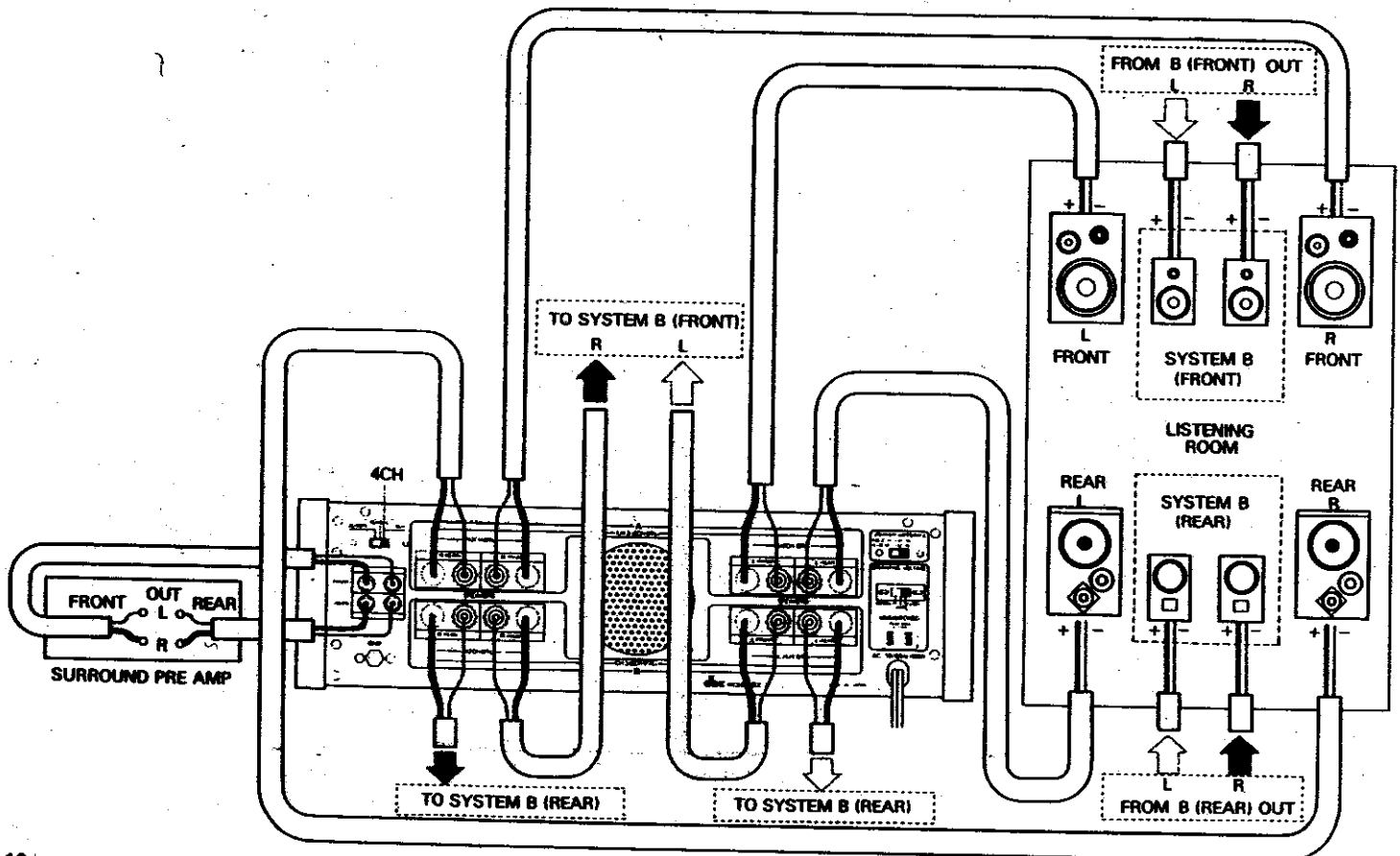
NOTE: All of the INPUTS connectors are used for this connection.

When driving another 4 channel system as System B, use the lower speaker terminals and connect the speaker cables referring to step 1) and 2).

To drive System B, Press the Speaker System selector 'FRONT' B and 'REAR' B (front panel 6). Red LEDs on these switches will become illuminated.

If the System B speakers are connected, up to four combinations of FRONT/REAR speaker systems will be available in accordance with the Speaker System selector settings.

To drive both systems simultaneously, press all the Speaker System selector switches.



ii CONNECTION FOR DUAL 2 CHANNEL SYSTEM

2 channel stereo speaker systems can be driven by using the two of the four amplifiers incorporated in the BX-3Mkl. Perform connections as follows.

- 1) Connect the speaker cables between the following terminals, checking the polarity (+ to + and - to -).

The unit's upper 'R (FRONT)' terminals and the right speaker terminals.

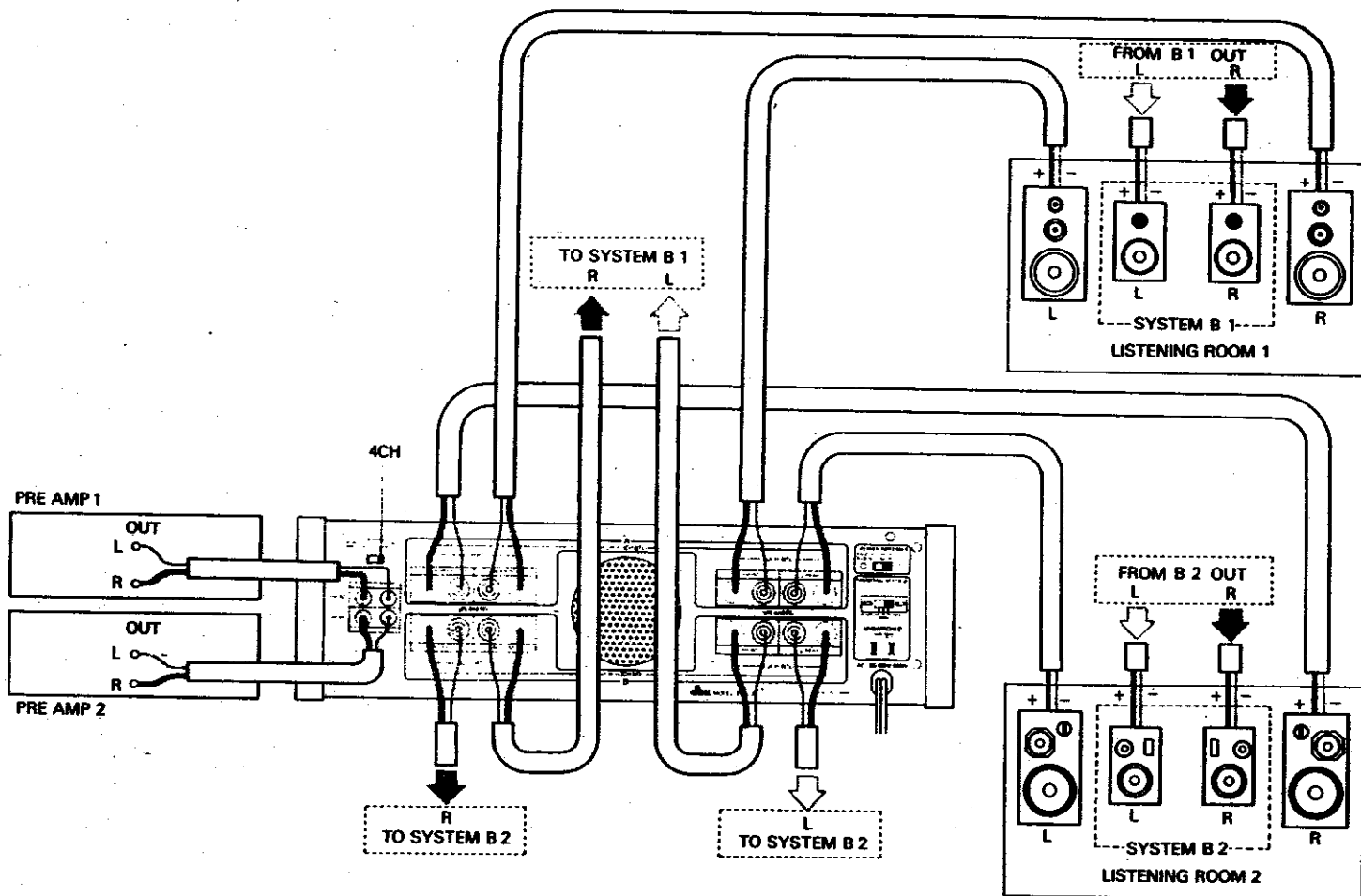
The unit's upper 'L (FRONT)' terminals and the left speaker terminals.

- 2) Set the Operating Mode selector to '4CH' position. LED indicators above all the Input Volume controls on the front panel (②) will become illuminated. Press the Speaker System selector 'FRONT' A (front panel ⑥). LED indicator above this selector will become illuminated.

- 3) For metering the level of the system which is currently used, set the Meter Switching button to FRONT position by pressing it. The LED indicator above this button will become illuminated.

NOTE: The INPUTS connectors (②) to be used for this connection are FRONT R, L only, and the REAR R, L are left unused. As it will be unnecessary therefore to use the Input Volume controls for REAR R, L, keep them turned fully counterclockwise.

Nevertheless, if another Pre Amplifier is connected to the REAR inputs to drive another speaker system, different source programs can be reproduced in the different listening room, as shown in the figure.



iii CONNECTIONS FOR 2CH 2WAY (BI-AMP.) OPERATION

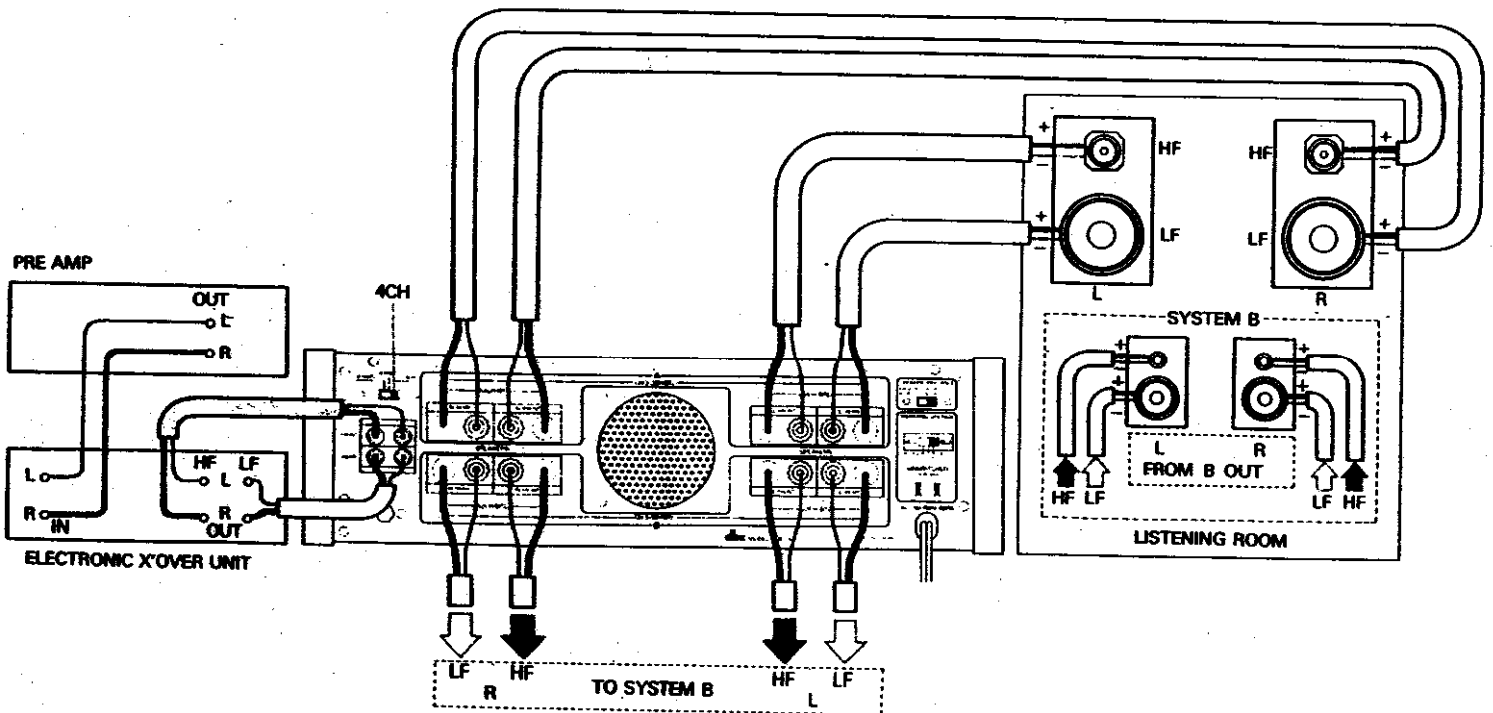
The 4 monaural amplifiers incorporated in the BX-3MkII can be used to drive independently the High Frequency Units with two amplifiers and the Low Frequency Units with the other two amplifiers. Connections for such Bi-Amp. operation is performed as follows.

- 1) To set up the High Frequency Units, connect the speaker cables between the following terminals, checking the polarity (+ to + and - to -).
The unit's upper 'R (FRONT)' terminals to the right High Frequency Unit terminals.
The unit's upper 'L (FRONT)' terminals to the left High Frequency Unit terminals.
- 2) To set up the Low Frequency Units, connect the speaker cables between the following terminals, checking the polarity (+ to + and - to -).
The unit's upper 'R (REAR)' terminals to the right Low Frequency Unit terminals.
The unit's upper 'L (REAR)' terminals to the left Low Frequency Unit terminals.
- 3) Connect an electronic crossover unit between the Pre Amplifier and the BX-3MkII. With the pin plug cables, connect from the High Frequency LINE OUT connectors of the electronic crossover unit to the BX-3MkII's INPUTS (FRONT), and from the Low Frequency LINE OUT connectors of the electronic crossover unit to the BX-3MkII's INPUTS (REAR).
- 4) Set the Operating mode selector to '4CH' position. LED indicators above all the Input Volume controls on the front panel (2) will become illuminated.

- 5) Press the Speaker System selector 'FRONT' A and 'REAR' A (front panel 6). LED indicator above these selectors will become illuminated.
- 6) The output level of the right High Frequency Unit can be controlled by the RIGHT/FRONT Input Volume Control, and the left High Frequency Unit by the LEFT/FRONT Input Volume Control.
The output level of the right Low Frequency Unit can be controlled by the RIGHT/REAR Input Volume Control, and the left Low Frequency Unit by the LEFT/REAR Input Volume Control.
- 7) For metering the level of the High Frequency Outputs, set the Meter Switching button to FRONT position by pressing it, and for metering the level of the Low Frequency Outputs, set the button to REAR position.

When driving another speaker system in Bi-Amp operation, use the lower speaker connectors for System B and connect the speaker cables referring to step 1) and 2).
To drive System B, press the Speaker System selector 'FRONT' B and 'REAR' B. Red LEDs on these switches will become illuminated.
To drive both systems simultaneously, press all the Speaker System selector switches.

NOTE: When System A and B are driven simultaneously, the volume of both systems cannot be controlled separately.

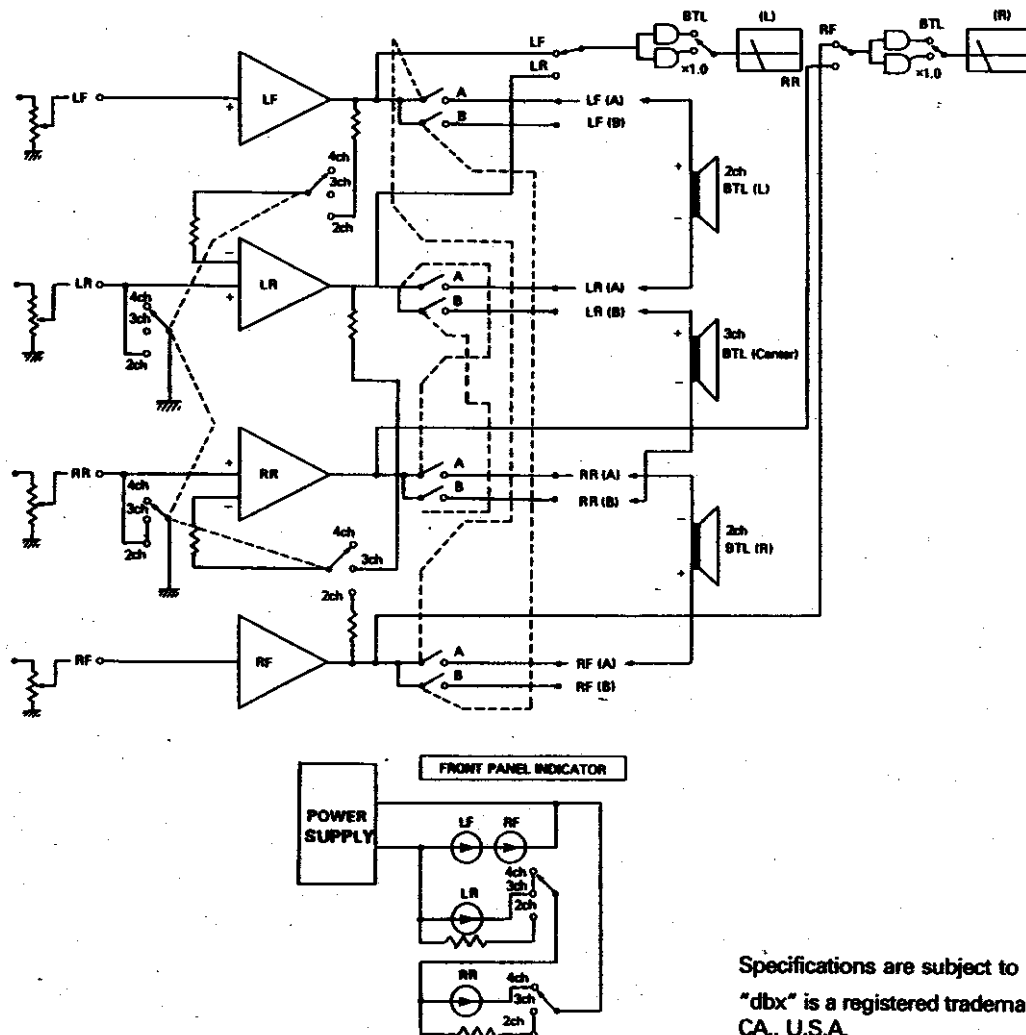


SPECIFICATIONS AND BLOCK DIAGRAM

SPECIFICATIONS

Power Output (RMS, 20 Hz~20 kHz)		Total Harmonic Distortion	<0.003% (at 125 W RMS Power, output: Single mode)
4 ch driven	125W × 4 (THD<0.003%)	Intermodulation Distortion	<0.003% (at 125 W RMS Power (60 Hz: 7 kHz=4:1, SMPTE) output: Single mode)
3 ch driven	125W × 2 (THD<0.003%)	Frequency Response (at 1 W)	DC~100 kHz (+0, -3 dB)
	400 W × 1 (THD<0.01%)	Input sensitivity	1.2 V (Single mode), 0.9 V (BTL mode)
2 ch driven	400 W × 2 (THD<0.01%)	Input Impedance	20 k-ohms
Power Output (Dynamic, IIF A-202)		Damping Factor	>50 (1kHz)
Single Mode	180 W per channel (8 ohms)	Signal to Noise Ratio (IIF-A)	115 dB
	320 W per channel (4 ohms)	Channel Separation	>90 dB
	450 W per channel (2 ohms)	Power Requirements	120/220/240 V (50/60 Hz), 600 W
Bridge (BTL) Mode	600 W per channel (8 ohms)	Dimensions (W × H × D)	18-3/4" × 5-3/4" × 16"
	900 W per channel (4 ohms)	Weight	46.4 lbs
Load Impedance	2~16 ohms (2~6 ohms, 6~16 ohms Switchable)		

BLOCK DIAGRAM



Specifications are subject to change without notice.
 "dbx" is a registered trademark of Carillon Technology Inc., Sunnyvale, CA, U.S.A.

WARRANTY and SERVICE (U.S.A. only)

dbx warrants this product to be free from defective materials and workmanship for a period of three (3) years from the date of first consumer purchase from an authorized dealer. If you are uncertain as to whether a dealer is authorized, contact us. The unit must be delivered by you or your representative with proof of purchase to one of our authorized service agencies.

Please save your sales slip, and please return the warranty registration card (doing so will establish a convenient proof-of-purchase date in case your sales slip gets lost). Note that not doing so doesn't affect your rights under this warranty; we ask you to simply because it's helpful to us.

For shipping, pack the unit carefully, in its original or other suitable packing. All merchandise must be prepaid and will be returned freight-paid. Include your or the sender's name and address, telephone number, and reason for return. Insure your shipment, and in the U.S.A. use UPS or similar carrier, not Parcel Post.

FOR INFORMATION ON YOUR NEAREST SERVICE STATION, contact your authorized dealer or call 1-800-648-7939.

For non-service problems and questions NOT covered in this manual, call (U.S.A. Pacific Standard time, business hours) our Customer Service, at 1 (408) 749-8400.

This warranty automatically transfers to subsequent owners, but does not extend to any of our products that have been subject to misuse, abuse, modification, neglect, accident, incorrect wiring not our own, or to use in violation of operating instructions furnished by us. Nor does it extend to any units altered or repaired for warranty defect by anyone other than an authorized service agency, nor to units with defaced, removed, or modified serial numbers. It is limited to, at our discretion, repair or replacement of the product.

This warranty does not cover any incidental or consequential damages and is in lieu of all other warranties expressed or implied, including those of merchantability and fitness, and no representative or person is authorized to assume for us any other liability in connection with the sale of our products.

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

For products purchased outside the U.S.A., this warranty is valid only in the country of purchase and the U.S.A.

NOTE again: For information on your NEAREST U.S.A. SERVICE STATION, contact your authorized dealer or call 1-800-648-7939.

dbx
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