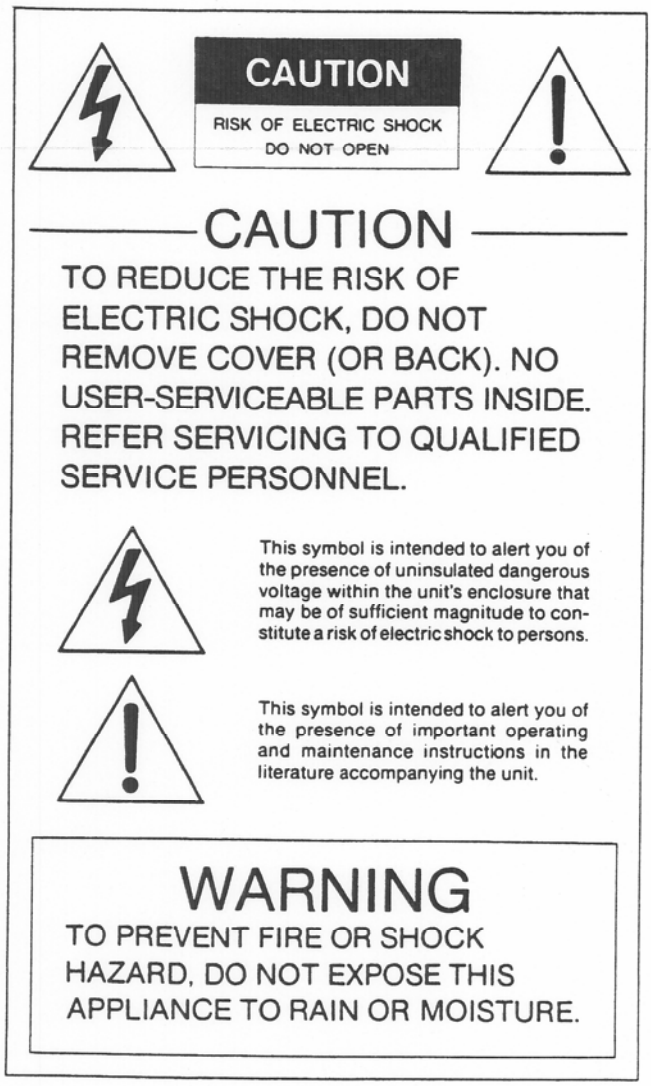
dbx

Model 5BX
Digital Series

Computer-Controlled 5-Band
Dynamic Range Controller

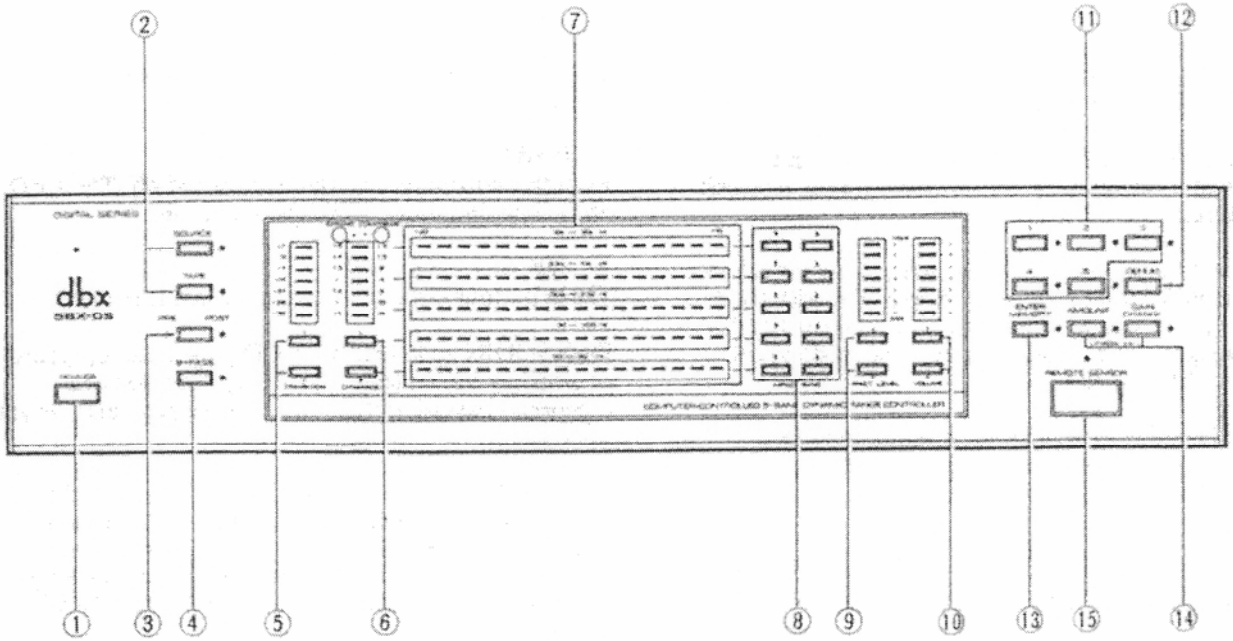
Instruction Manual



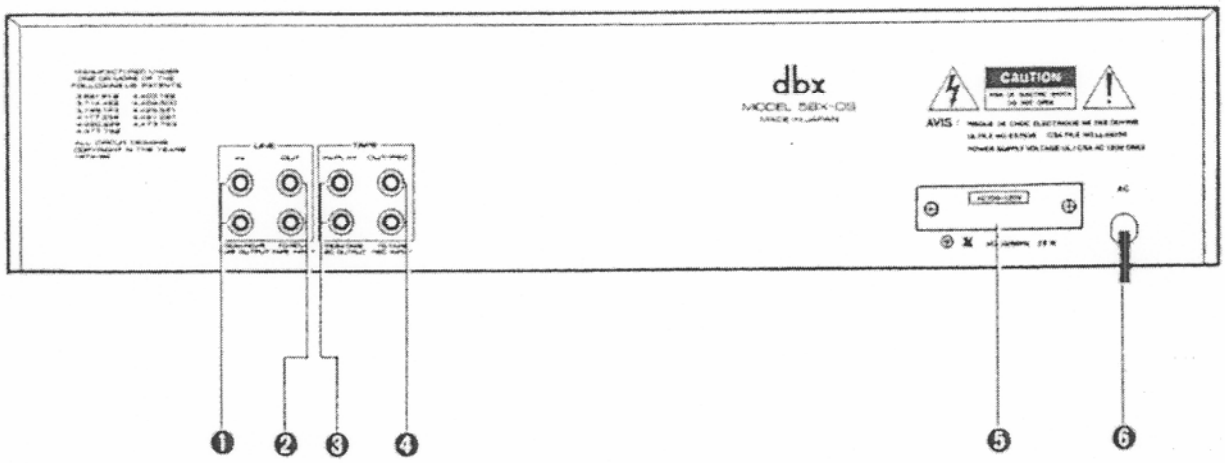
CONTENTS

FRONT PANEL

ABOUT THE REMOTE CONTROL, SEE PAGE 5.



REAR PANEL See page 5.



1. INSPECTION and INSTALLATION

Your unit was carefully packed at the factory in a protective carton. Nevertheless, be sure to examine both carton and contents for any signs of damage that may have occured during shipping. If there is such evidence, don't destroy the carton or any of the packing material, and notify your dealer or distributor immediately.

In any case it's a good idea to save the carton and packing materials should you ever need to ship your unit in the future.

In addition to a 5BX-DS and this instruction manual, the carton should contain a set of hookup cables with RCA phono, or pin, plugs, a warranty/registration card and a pair of brackets for mounting the unit into a standard audio-equipment rack.

No special cooling or ventilation is required in any installation; other components may be stacked above or below the 5BX-DS provided they don't generate excessive heat.

FOR USERS IN THE UNITED KINGDOM

Important

The wires in the unit's main lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live.

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

The blue wire must be connected to the terminal that is marked with the letter N or coloured black;

The brown wire must be connected to the terminal that is marked with the letter L or coloured red.

Ensure that all terminals are securely tightened and that there are no loose strands of wire.

Warning
This unit must be protected by a 3-amp fuse, preferably using a fused plug.

Also, do not remove the cover without first disconnecting the unit from the mains supply.

2. CONTROLS and FUNCTIONS

FRONT PANEL

The remote control duplicates the function of all the controls except 1, 2, and 3 below.

① **POWER.**
Push this button to turn the unit on and off. The LED above will illuminate when the unit is on.

② **SOURCE and TAPE.**
These buttons control the program you listen to.

Push SOURCE to hear your CD player, radio, record player, or auxiliary inputs (e.g., TV/VCR). Now you can compress/expand/add impact to these programs, as you wish.

Push TAPE to listen to your deck's playback and to "access" (bring into the signal path) any processors connected in the 5BX-DS's tape loop. If your deck has monitoring ability (three heads), you can check a tape being recorded by comparing SOURCE and TAPE.

③/④ **PRE/POST and BYPASS.**
The first button choose where the 5BX-DS actions take place with respect to your tape deck -- before it (during recording) or after it (during playback). BYPASS takes all the processing circuits out of the signal path altogether.

Push PRE/POST to light PRE to expand the program before you tape it (the deck in its record mode, of course); you'll be recording a signal modified according to your taste.

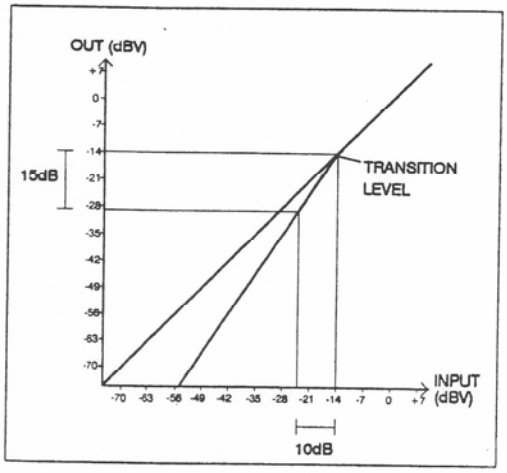
Push PRE/POST to light POST for expansion on playback only (which is probably the more common application).

⑤ **TRANSITION LEVEL buttons.**
These buttons set the mid point of the processing action, the level above and below which the circuits do their stuff, according to their arrows, and is shown in the 7-LED column above them.

TRANSITION level and the expansion
When the incoming program signal is below (softer than) the transition level, the 5BX-DS expands it downward, making it still softer. (The amount of the 5BX-DS expands the signal is contrlled by the DYNAMICS [expand] ratio setting.)

Example:
With a setting of the expansion (DYNAMICS) ratio "1.5" and TRANSITION level "-14" (dBV), an input signal of -24 dBV will be expanded to -29 dBV as the difference between the signal and the transition level is 10 dB which is then expanded to 15 dB.

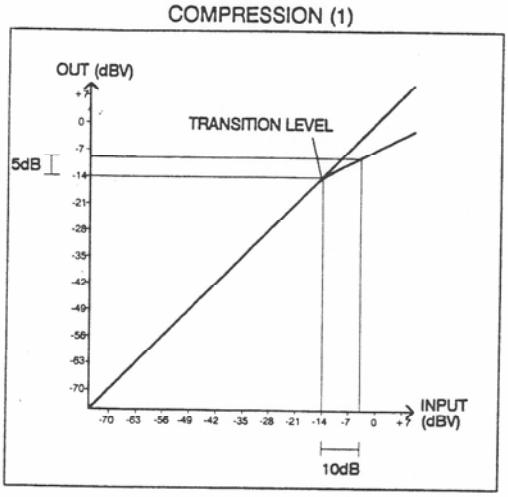
EXPANSION



TRANSITION level and the compression
When the signal is above (louder than) the transition level, the 5BX-DS compresses it downward, making it softer. (The amount of the compression is also controlled by the DYNAMICS [compress] ratio setting.)

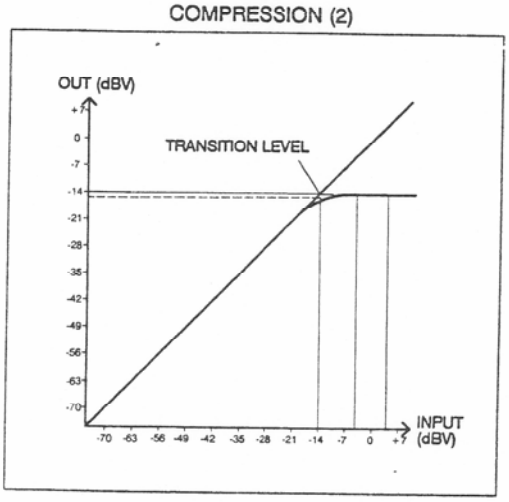
Example 1:
With a setting of the compression ratio "2" and TRANSITION level at "-14" (dBV), an input signal of -4 dBV will be compressed to -9dBV, 5dB softer than before compressed, as the 10dB increase (the difference between the signal and the transition level) in the input signal will produce a 5dB increase in the output level.

COMPRESSION (1)



Example 2:
With a setting of the compression ratio "infinity" and TRANSITION level at "-14" (dBV), whatever + or -4 dB the input will be, the output level will remain -14 dB, as the increase in any signals above the transition level is limited to zero. See infinity:1 = 1/infinity = zero. (This action may be referred to as "peak-limiter.")

COMPRESSION (2)



⑥ **DYNAMICS, EXPAND, COMPRESS.**
The two buttons control the amount of expansion and compression.

The DYNAMICS ratio is set to "1" automatically when the 5BX-DS is defeated (DEFEAT pressed) and the LED column is extinguished.

To expand the dynamic range of the sound, press the ∧ button.

By pressing the ∧ button when dynamic ratio is "1," the 5BX-DS enters the expansion mode (lighting EXPAND) and increases the amount of expansion towards "1.5" (50 % increase) maximum.

Pressing the ∧ button when the 5BX-DS is in compression mode decreases the compression ratio and expands dynamic range. (The LEDs in the column will extinguish one after another in "upward" direction.)

If you continue pressing the ∧ button the dynamics ratio approaches "1" at which the COMPRESS indicator will be off.

To compress the dynamic range of the sound, press the v button.

By pressing the v button when dynamic ratio is "1," the 5BX-DS enters the compression mode (lighting COMPRESS) and increases the amount of compression towards "infinity" (no increase in output level). (The LEDs in the column illuminate in "downward" direction.)

Pressing the v button when the 5BX-DS is in expansion mode decreases the expansion ratio and compress dynamic range. (The LEDs in the column extinguish one after another in "downward" direction.)

If you continue pressing the v button the dynamics ratio approaches "1" at which the EXPAND indicator will be off.

Note:
The level above or below which the expansion or compression begins to affect the signal is determined by the transition level (see TRANSITION, 5).

⑦ **Dynamics display.**
The LED rows of the display show the amount of gain (volume) changes for expansion/compression/impact recovery in the five frequency bands the 5BX-DS divides the audio program into. (From the bottom, these are, 20 - 50Hz, 50 - 300 Hz, 300 - 2.5kHz, 2.5k - 10kHz, and 10 - 20kHz.)

The yellow LEDs, to the left, show the attenuation level by dynamic range expansion (to soften a soft signal) and compression (to soften a loud signal) to -20 dB.

The right-hand, red LEDs are read from left to right, up to + 10dB, and show the amount of impact recovery the 5BX-DS provides (when the DISPLAY/AMOUNT button is pressed as mensioned later).

⑧ **IMPACT BAND.**
The 5-band buttons separately adjust the amount of the impact recovery for each band from 100% to 0%, to suit various kinds of instrument in the program, etc. The overall amount is varied by the IMPACT LEVEL buttons, 9.

First, press the DISPLAY/AMOUNT button. When all the red LEDs in one dynamics display row illuminate, the impact recovery for the band is 100% in reference to the overall level predetermined by the IMPACT LEVEL buttons. The v buttons decrease the amount of impact recovery, as shown by the LED rows. To restore for the 100% setting, press the ∧ button.

⑨ **IMPACT LEVEL.**
These buttons adjust the overall amount of adding impact to transients (attacks) in the program.

Press the ∧ button to add impact to transients -- the attack at the beginning of a drum beat, for example, for a crisp sound.

The amount of the impact recovery for each of the five bands can be separately adjusted as above, 8.

⑩ **VOLUME.**
These buttons raise and lower the volume of the sound, or the LINE OUT signal level, according to their arrows and in the amount shown by the LED column above them. The maximum setting in this column is the unity-gain position (when BYPASSed), where the level of loudness is the same as from your preamp, the 5BX-DS making no increase or decrease.

Note the VOLUME has no effect on the recording output level.

⑪ **Memory 1-5.**
These buttons allow programming up to five set of processing parameters (expansion, impact recovery, and compression) for later recall.

Programming is triggered by the ENTER MEMORY button. The controls which set the parameters to be programmed are TRANSITION LEVEL, DYNAMICS, IMPACT BAND, IMPACT LEVEL, and VOLUME.

⑫ **DEFEAT.**
This button resets any parameters set on the controls as follows:

Controls	Value after DEFEAT
TRANSITION	-14dB
DYNAMICS	1
VOLUME	maximum (unity gain = 0dB)
IMPACT LEVEL	minimum (= 0)
IMPACT BAND	100% (maximum)

⑬ **ENTER MEMORY.**
Press in prior to program a memory.

⑭ **DISPLAY/AMOUNT-GAIN CHANGE.**
These buttons select the mode of the impact recovery (red, to the right of the dynamics display) LED rows as follows.

When AMOUNT is pressed the red LED rows look like the VOLUME LED column and indicates the amount of the impact recovery as set by the master IMPACT LEVEL buttons and the each IMPACT BAND buttons.

In GAIN CHANGE mode, the LED rows in real-time show how the 5BX-DS's impact recovery is working on the attack of a musical transient, e.g. a drummer's rim shot. All the LEDs in the row are read from left to right.

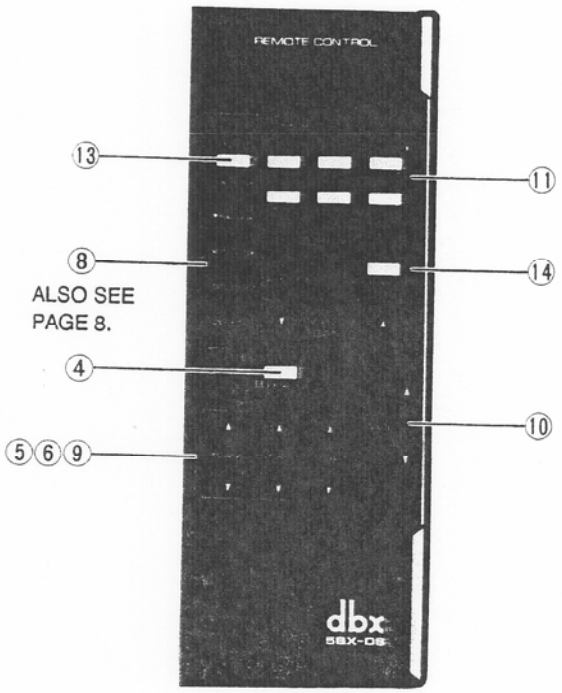
⑮ **REMOTE SENSOR.**
The infra-red sensor window for receiving the command from the remote control unit.

Use care not to allow strong lights entering through this window. This will avoid mal function of the 5BX-DS.

⑯ **Remote control.**
The handheld remote control lets you control all of the 5BX-DS's functions except SOURCE/TAPE and PRE-POST.

The control is not particularly directional and can operate over a range of approx 25 feet.

The supplied batteries should last a year or more in typical use; replace them with the same type. Remove the betteries for prolonged non-use period.



The numbers refer the main unit 5BX-DS controls.

REAR PANEL

❶ **LINE IN.**
Connect your preamp's Tape Out to these inputs.

❷ **LINE OUT.**
Connect these outputs to your preamp's Tape In. (Note that with some components Tape Output is called Tape Rec and Tape In is called Tape Play or Tape Monitor, and there are other variations.)

❸ **TAPE IN/PLAY.**
Connect your tape deck's Output (or Play) to these inputs.

❹ **TAPE OUT/REC.**
Connect these outputs to the Input, Line In, Rec(ord) or whatever on your tape deck.

If you have a dbx noise-reduction unit or other signal-processing equipment, study the diagrams in page 10.

❺ **POWER CORD.**
Connect this cable to the appropriate power source. If another piece equipment has a switched outlet (your preamp, for instance), that's one good place to plug in.

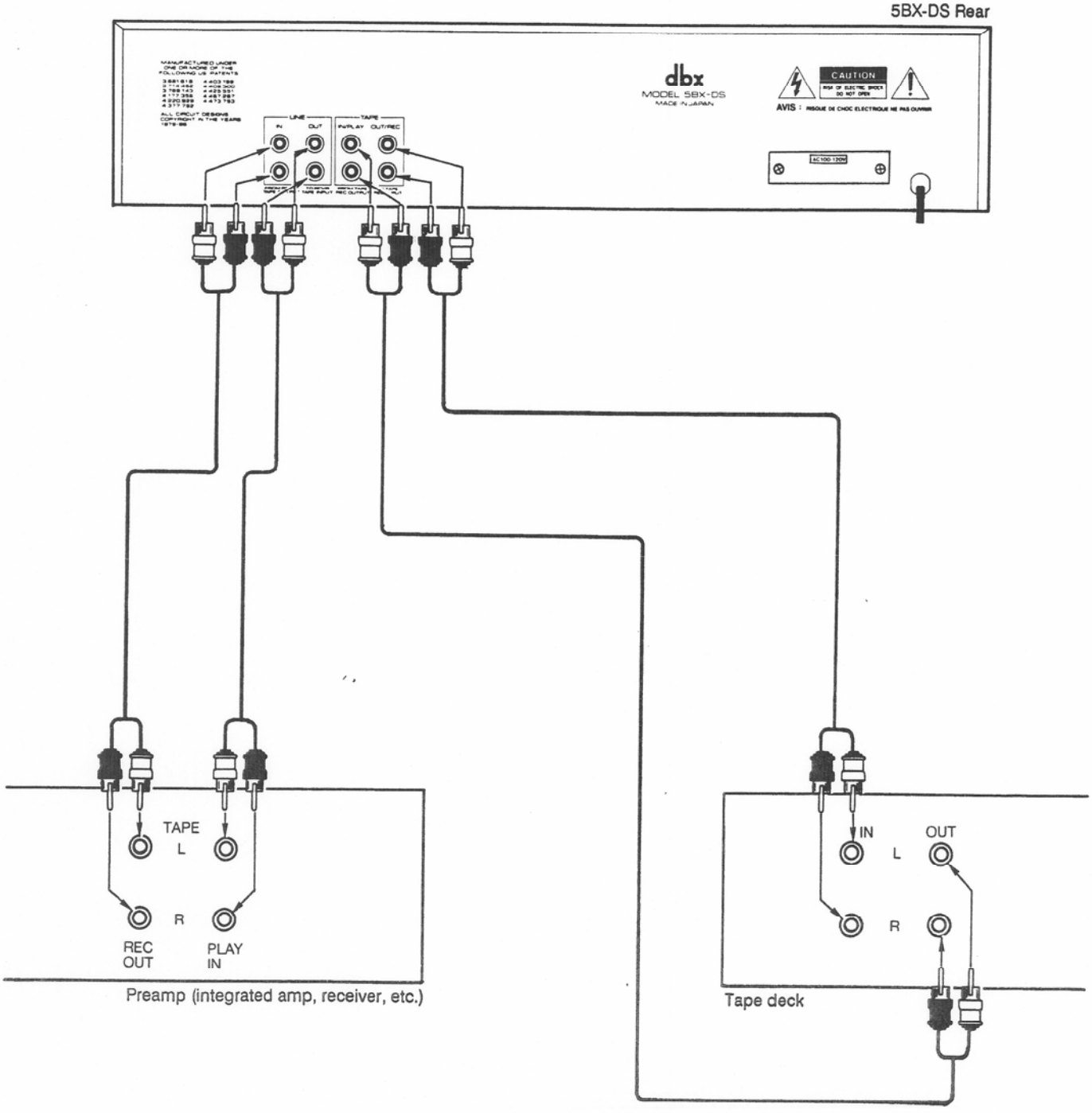
For PX model only
If you ever need to change the voltage setting, unplug the unit from the wall jack and also push the power switch off. Then unscrew the small voltage cover plate near the ac cord, move the switch with a small screw-driver, turn the plate upside down (180-degree, in other words, which exposes the switch in its new voltge position), and screw it back on. Don't turn the plate over.

3. BASIC SIGNAL CONNECTIONS

Turn your system off and the volume all the way down.

"Preamp" stands for your preamp, receiver, or integrated amp -- or the tape-monitor (record/play) loop of an equalizer or other component. The 5BX-DS has its own tape monitor to replace the one it occupies. The 5BX-DS goes between the preamp and the tape deck, in the former's tape-monitor loop, as shown. The tape deck then goes in the 5BX-DS's tape loop.

Note:
Nomenclatures for the tape-monitor loops may vary from preamp to preamp.



4. OPERATION

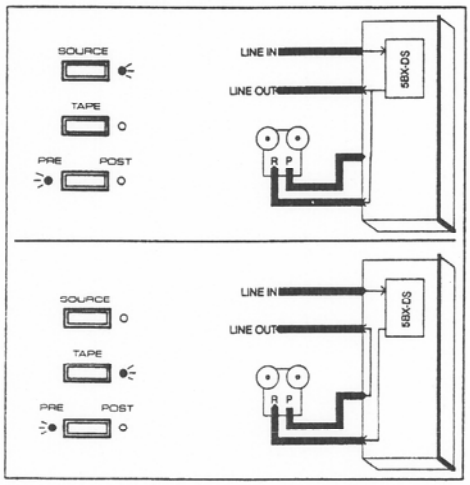
4.1 ENTERING THE MONITOR MODE

1 Refer to "Connections," and make sure all connections have been made properly and securely.
2 Set the preamp's tape monitor switch to on. (Set your preamp's "Input Selector" or "Tape Monitor" to "Tape (1, 2 etc.)."
3 Select the progam you listen to by the SOURCE or TAPE button.

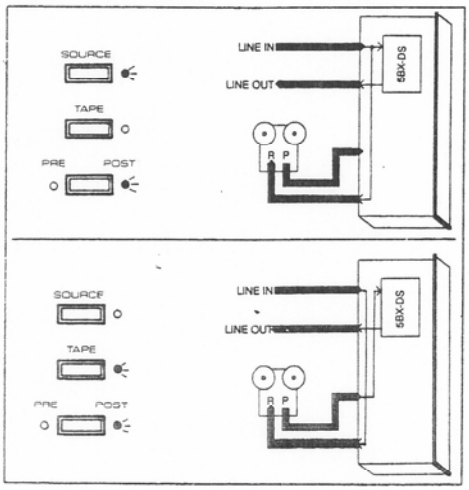
(1) Press SOURCE to listen to your CD, tuner, etc. If your preamp is equipped with a "Rec Out Selector," etc., set it to the "CD" or "Tuner" etc. (the preamp's input selector set to "Tape").
(2) Press TAPE to listen to the tape deck connected to the 5BX-DS rear.

4 Select the PRE or POST mode by the PRE/POST button.

(1) PRE: The 5BX-DS affects both monitoring and recording the source (and not playback of the tape deck).



(2) POST: The 5BX-DS affects monitoring the source and playback of the tape deck (and not recording the source).



4.2 SELECTING THE MODE OF PROCESSING

4.2.1 Expansion

1 Press DEFEAT once. (This sets the transition level to "-14" automatically, and parameters of the other controls to MINimum.)
Set the desired expansion ratio by using the ∧ DYNAMICS button and the LED column.

2 The expansion ratio increases as the DYNAMICS ∧ button is pressed and held (the LED column rises) towards "1.5" (50% expanded, maximum), as shown in the LED column. Release the button when you have reached the desired setting.

To decrease the expansion ratio, press and hold the DYNAMICS ∨ button.

3 Adjust the transition level below (softer than) which the 5BX-DS expands it downward, by the TRANSTION level buttons, according to their arrows, and the LED column.

Note:
For details of the adjustment, refer to "2. CONTROLS and FUNCTIONS," as well as "6. PROCESSOR OPERATIONS

4.2.2 Compression

1 Press DEFEAT once. (The same occurs as above.)
Set the desired compression ratio by using the ∨ DYNAMICS button and the LED column.

2 The compression ratio increases as the DYNAMICS ∨ button is pressed and held (the LED column falls) towards "infinity" (infinity:1), as shown in the LED column. Release the button when you have reached the desired setting.

To decrease the compression ratio, press and hold the DYNAMICS ∧ button.

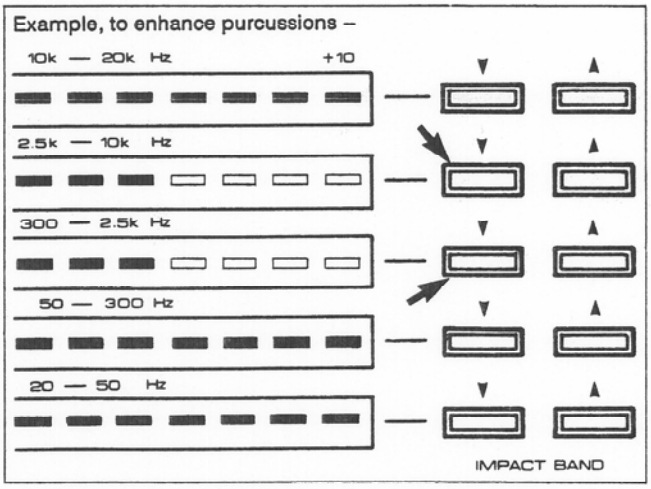
3 Adjust the transition level above (louder than) which the 5BX-DS compress it downward, by the TRANSTION level buttons, according to their arrows, and the LED column.

4.2.3 Impact Recovery

1 Press DEFEAT. (This resets the IMPACT LEVEL LED column to MINimum.)
2 Adjust the overall amount of the impact recovery by the IMPACT LEVEL buttons, according to their arrows.
3 Playback a program and press the [DISPLAY] GAIN CHANGE button. The 5-band impact recovery LED rows (red, to the right) will shown an impact recovery actually and in real-time working on musical transient attacks.

4 Press [DISPLAY] AMOUNT. The impact recovery LED rows should show the previously fixed amount of the impact recovery. After DEFEATed, the amount of the impact recovery for each band is set to equaly maximum (all red LEDs lighting), and impacts are added to transients in all bands by the same amount of impact recovery. The separate band impact restoration adjustment adds natural crispness to music and impact to sound, and does so musically. If the adjustment done in step 2. should result in an over-recovery effect in the certain band(s), then you may press the v button to decrease it. The setting is 100% when the LED row is lighting fully to the right; and none (0%) when to the left (but not overriding the yellow LEDs).

For example, if you wish to enhance the freshness of percussions, while wishing vocals go in modest way, lower the amount in the mid (300Hz - 2.5kHz) and mid-high (2.5k - 10kHz) bands, as depicted below.

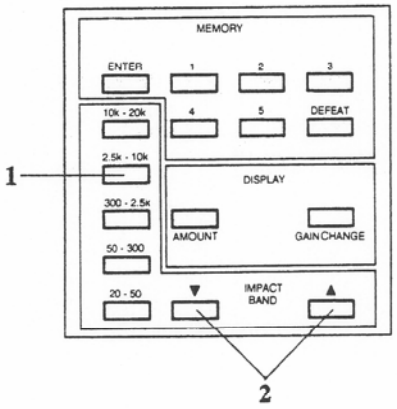


The impact restoration can be used simultaneously with the compression, as well as expansion.

To adjust the impact recovery from the remote control

Use the following procedure for adjusting the amount of the impact recovery from the remote control unit:

On the remeote control unit ---
1 Select the band to adjust the amount of the impact recovery and select that button, e.g. "10k - 20k."
2 Press the IMPACT BAND buttons, according to ıeir their arrows.
3 Select the other band and do the same.



REMOTE CONTROL

Up/Down-Arrow Buttons and the LED Column
The luminosity of the each one LED in the columns DYNAMICS, TRANSITION, IMPACT LEVEL, and VOLUME varies in "half" and "full," depending on how many times the buttons are pressed. The half-lighting LED indicates that the parameter for the control is adjusted to less than half the labelled value of the LED; the full-lighting LED indicates that it is between half and full labelled value of the LED.

Since the transition of the luminosity of the one LED in each column takes many steps of the buttons, any intermediate setting (between the LEDs) can be made.

4.2.4 Programming Memory

Program up to five sets of processing parameters for expansion, impact recovery, and compression, depending on variety of the programs.

The controls for the programmable parameters are as follows:

TRANSITION level,
DYNAMICS ratio,
VOLUME,
IMPACT LEVEL, and
IMPACT BAND levels.

1 Select the source to process and adjust the above controls for optimum processing. You can also program the VOLUME level, if desired.

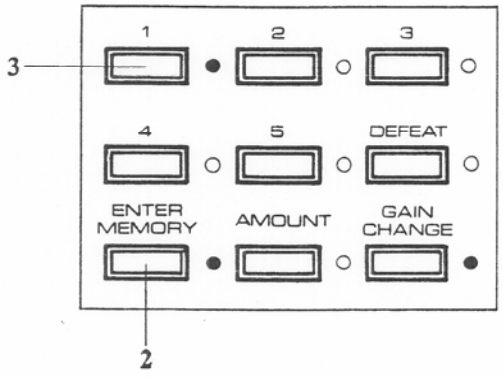
2 Press ENTER MEMORY. (To revoke the entry, press again.)

3 Press the memory 1 - 5 button, where you want the parameters to be located, e.g. "1."

4 Repeat above procedure and you may program all the five buttons.

You can program a new parameter set to the button, the previous set will be erased.

To recall a memorized processing, press the corresponding memory button. Comparisons among processings or between a processing and no processing (DEFEAT) are simple and instantaneous.

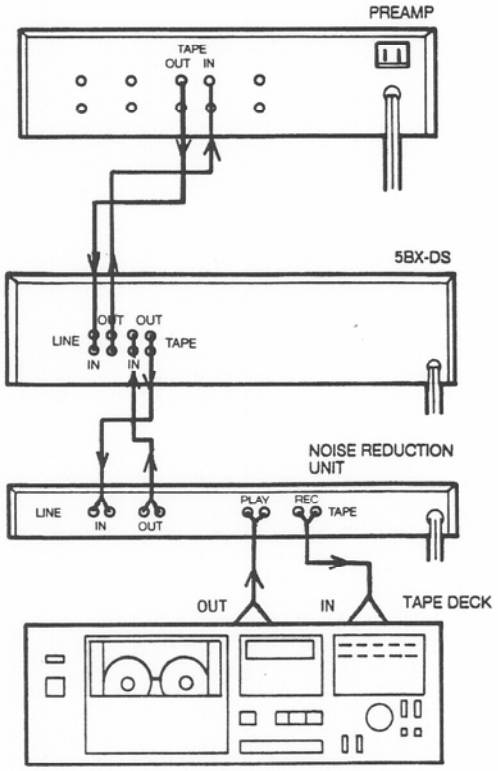


5. HOOKUPS AND OPERATION WITH OTHER PROCESSORS

5.1 WITH A NOISE REDUCTION

5.1.1 Connections:

Refer to "3. CONNECTIONS" and connect your noise reduction unit between the 5BX-DS and the tape deck.



5.1.2 Operations

To listen to FM, discs, etc., through the 5BX-DS:

Press SOURCE. (IF you want the source encoded and recorded onto the tape deck, set the noise reduction unit to "RECORD" mode and record on the tape deck.)

To record FM, discs, etc., through the 5BX-DS, simultaneously encoding by the noise reduction:

Press SOURCE and select PRE. Set the noise reduction to "RECORD" mode and record on the tape deck. (To ensure optimum level matching with the noise reduction and optimum recording level, refer to the instructions accompanying the units.)

Note:
The source signals bypass the noise reduction if the noise reduction is set to "BYPASS" mode.

To real-time monitor the recording, switch the 5BX-DS from SOURCE to TAPE (PRE).

To playback a tape recorded with noise reduction, through the 5BX-DS:

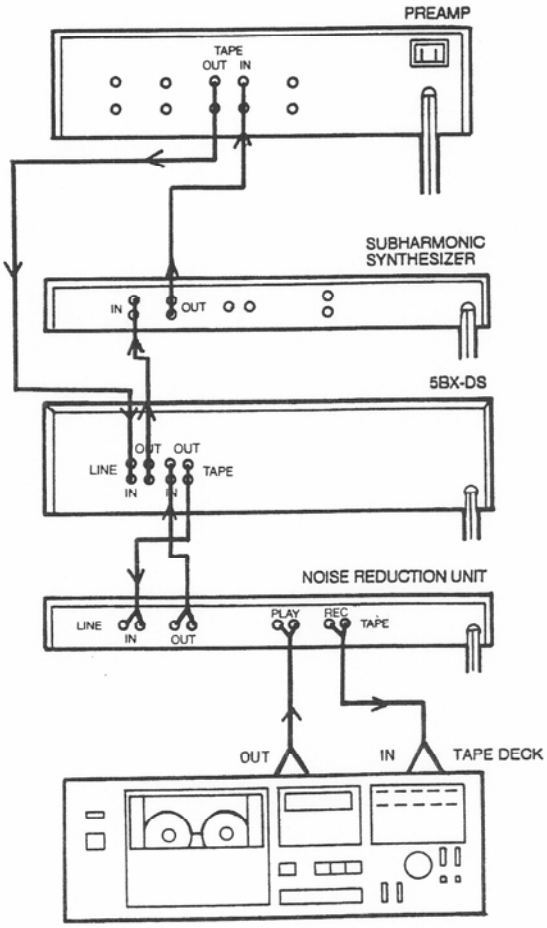
Press TAPE and select POST. Set the noise reduction unit to "PLAY."

Note:
To playback an expanded tape, press BYPASS (the noise reduction should be in "PLAY" mode).

5.2 WITH A dbx SUBHARMONIC SYNTHESIZER

5.2.1 Connections:

Refer to "3. CONNECTIONS" and connect your subharmonic synthesizer between the 5BX-DS's LINE OUT and the preamp's tape inputs.



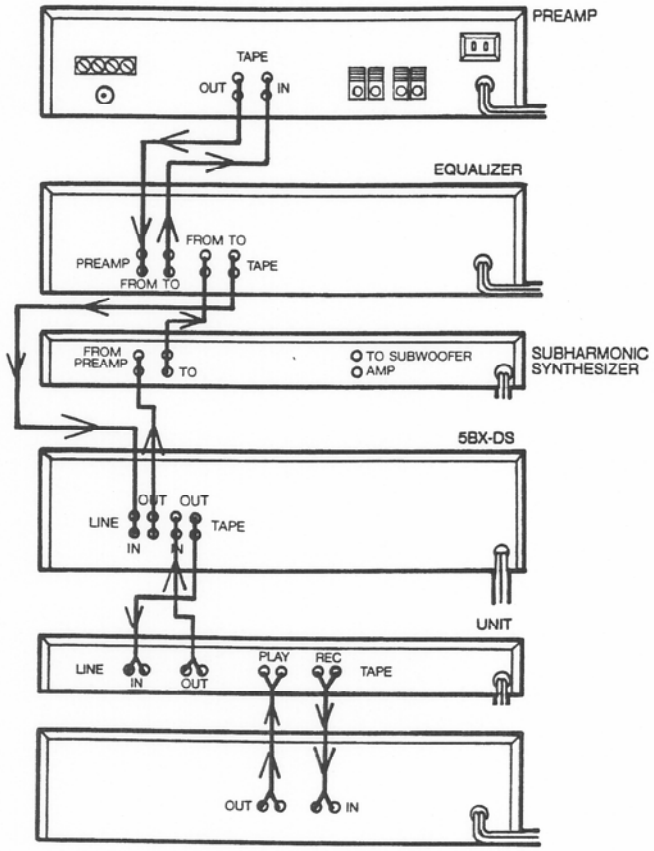
5.2.2 Operation

Operate the 5BX-DS and the tape deck as above. Set the dbx subharmonic synthesizer to "OPERATE." The (processed) source signals from the 5BX-DS's output can be listened through the subharmonic-synthesizer.

5.3 WITH AN EQUALIZER

5.3.1 Connection:

Refer to "3. CONNECTIONS" and connect your equalizer between the 5BX-DS and the preamp.



5.3.2 Operation

Set the "Source/Tape" switch on the equalizer to "Tape."
To select the monitoring source, use SOURCE and TAPE buttons of the 5BX-DS.
Operate the 5BX-DS, tape deck, and subharmonic synthesizer as previously described.

6. PROCESSOR OPERATION

6.1 General——*About Dynamic Range*

What auditorily define "sound" are its pitch and strength. Pitch, an undulatory motion of air or other elastic medium, is expressed in "frequency," and is generally known to range from below 20 times a second (Hz is the abbreviation) to about 20,000 times a second for the ear of someone with acute hearing. The relative difference (change) between the loudest peaks and the quiet passages in a source is called the "dynamic range," and expressed in decibels.

6.1.1 Dynamics of typical sound sources

Assume the smallest sonic change detectable by most people is "1," the level at which most people put their hands over their ears is about 1,000,000 times louder. (In decibel expression, "1" is "0dB" and million is "120dB.") The dynamic range of human hearing thus is customarily said to be around 120dB.

The following lists the sound pressure level (loudness) typical sound sources provide.

Relative SP	SPL(dB)	Typical sources
-	130	Firing of cannon (close by)
1,000,000	120	Jet engine (close by)
-	110	Orchestra/Band (seated audience)
100,000	100	Train/Propeller (passenger)
-	90	Bus/Truck (passenger)
10,000	80	Automobile (passenger)
-	70	Average urban noise
1,000	60	Average office noise
-	50	Small office noise
100	40	Living room
-	30	Suburban, bed room
10	20	Studio, recording
-	10	Unechoic chamber
1	0	Absolute silence

6.1.2 Dynamic Range of Signal Sources

The audio signal sources include tapes, analog-discs, FM, compact discs, etc., and each has its own specific, different dynamic range. The dynamic range of a signal souce is the difference between the overload level and the minimum acceptable signal level for recording and transferring of the system. Signals above (louder than) the maximum level, also expressed as the "saturation level," cause distortion in the sound. The bottom of the dynamic range of the system is limited by its own residual noise level. The quiet passages will be lost in the noise. Higher the saturation level and lower the noise level, wider the dynamic range will be. The following lists the dynamic range of popular sound sources:

Analog sources	Approximate Dynamic Range
Records	50 - 60dB
FM	60dB
Cassette tapes	55dB
Open-reel tapes	65dB

Digital sources	Dynamic Range
CD	96dB
PCM (16-bit)	96dB

6.1.3 Dynamic Range Restriction in Recording

Unfortunately, the most popular analog forms of storing recorded music, as shown above, have dynamic ranges much less than the true peaks generated in a live performance which can be up to 110dB. The dynamic range of live music must be manipulated in order to fit the constr-icted limits of the popular storage media. This manipulation is accomplished by compressing the signal and/or riding the gain in the recording in (or broad-cast): loud passages are reduced in level and soft paassages are increased. The overall dynamic range is thereby restricted. More than 30dB in dynamic range has to be gotton rid of in order for the soft sounds to be recorded above the noise floor and for the loud sounds to stay below an unacceptable distortion level.

Whatever the form will be, music includes the attack of a note or chord. The size of such attacks sometimes is some 10dB louder than the average level of the music itself. Many of these transients get clipped off during the recording process, because of the limited headroom and transient response of the media. But even if the peaks aren't blunted in the recorder, the microphones and mixers might mute them away. Because of the peak-limiters are customarily employed to avoid saturation against unpredictable input overloading, transients are intetionally dulled.

If we want to help restore whatever may have gotton lost in the manipulation of getting the sound from the performance to our listening rooms, the 5BX-DS will go a long way toward undoing the damage.

6.2 DYNAMIC RANGE CONTROLLING BY THE 5BX-DS

The dbx 5BX-DS enables a listener to recover substantial portions of the dynamic range missing in existing conventional recordings by controlling the dynamics balance in the source. You can expand/compress/add impact to the programs.

6.2.1 Expansion

In the music sources, the dynamic range is limited. If you want to reproduce sound accurately, the lost dynamic range must be restored to call for the original size. An expander is required.

Depending on the source to be reproduced, two types of expansion will be available:

Linear Expansion

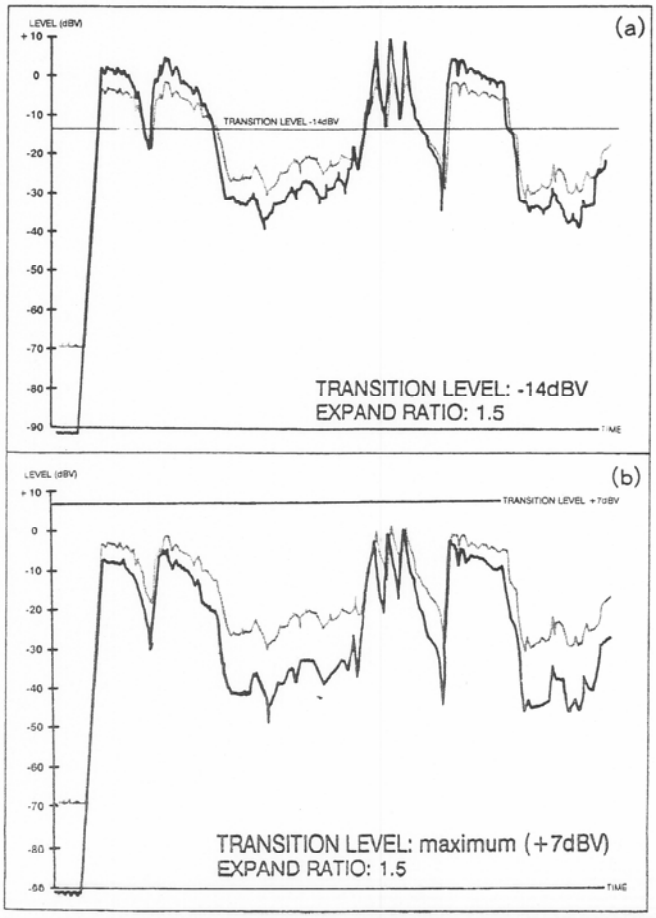
This type of expansion works on the overall of the level variation of passages. It increases the volume of passages louder than the transition level, and decreases the volume of low-level ones, linearly expanding the dynamic range of the program. The linear expanders include the dbx 3BX series. Refer to fig. (a).
Your 5BX-DS is compatible with the linear expansion by setting the transition (TRANSITION) level to +7dBV (maximum) and adjusting the expansion ratio properly. (Unlike conventional linear expanders, the 5BX-DS does not expand the program signal "upward" (making loud signals louder), however, signals greater than +7dBV is seldom encountered in regular sources.)
Refer to fig.(b).

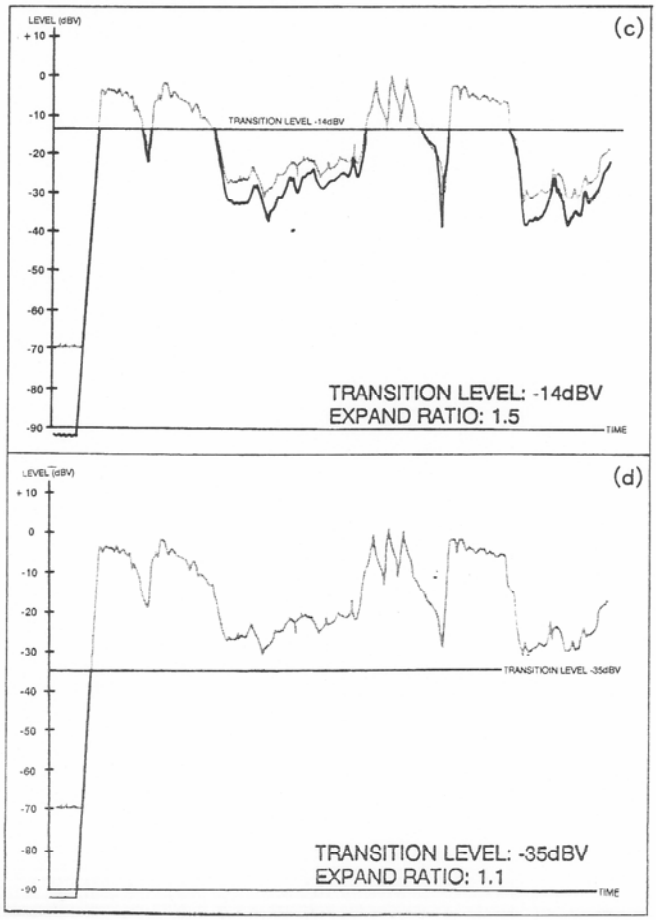
Non-Linear Expansion

The non-linear expansion, only the 5BX-DS features, expands doward, making the progam signals below (softer than) the transition level (set arbitrarily) still softer. Refer to fig.(c).

This type of compression is useful for CD sources. It retrieves the quiet music at low levels and also makes their noise floors inaudible. The non-linear expansion is achieved by setting the transition level to -25 to -35dB. Refer to fig.(d).

All examples taken from L.V.Beethoven's Fifth Symphony
GREY LINES FOR ORIGINAL



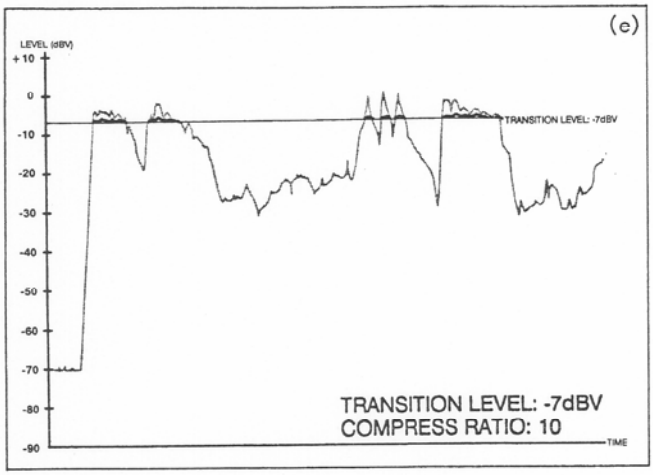


6.2.2 Compression

Compression cuts the dynamic range of the program by making loud passages quieter. The 5BX-DS's compression works as a limiter which decreases the volume of the signal above the transition level.

Everyone appreciates the silent background, extraordinary clarity, and unstrained peaks of compact discs. For serious listening at high levels, this wide dynamic range permits an unprecedented feeling of liveness or you-are-there-ness to the sound, as if we're actually present while the tape rolls at the recording session. But for other situations -- background listening, or while reading -- who needs all this dynamic range? If you bring up the quiet passages, the loud moments will shake the room, and if you keep the peaks tolerable, you lose all the low-level detail.Furthermore, for making cassettes from CD sources, etc., a compressor is mandatory.

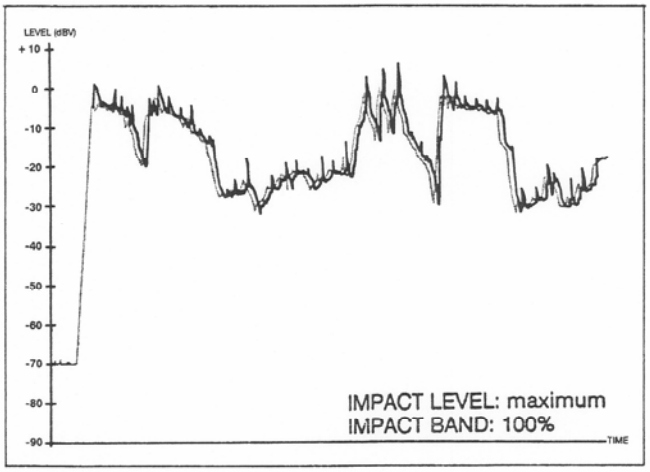
The setting of the transition level and compression ratio determines the level above which and how the 5BX-DS compresses.



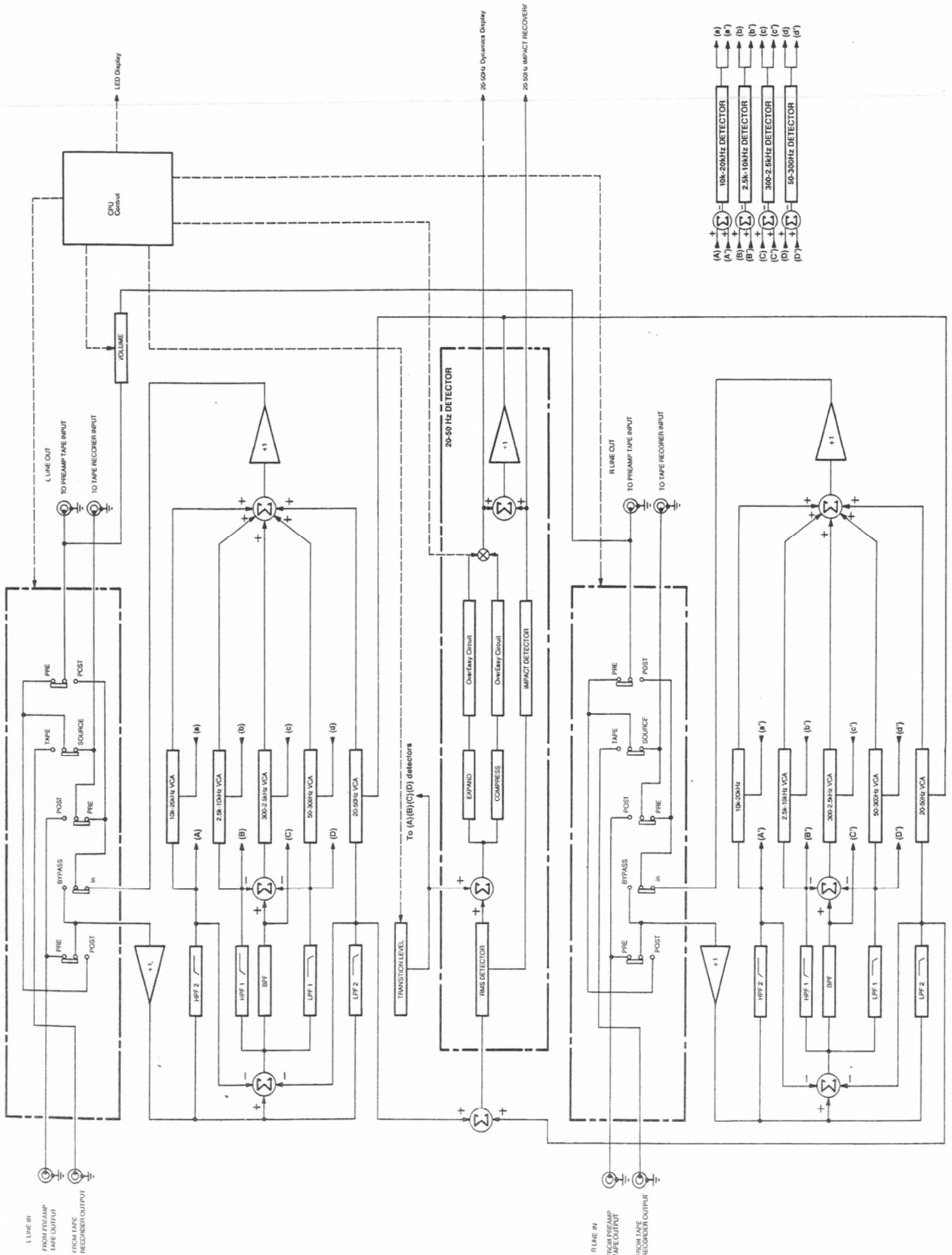
6.2.3 Impact Recovery

"Impact recovery" is to add impact to transients -- the attack at the beginning of a drum beat, for example. Such punch added to musical attacks gives them greater "liveness." Such transients are not accurately recorded unless the transient response of the recorders, etc., are substantial and the dynamic range of the media is wide enough to accommodate it. Conventional analog tapes/records do well to reach beyond 50 to 55dB and the transient responses are insufficient. And even the digital sources's "96dB" sometimes cannot truely reach the peaks.

The 5BX-DS's impact recovery, if the music calls for it, can add up to +10dB. Since it splits the audio signal into five bands and processes and releases each separately and automatically, the 5BX-DS can impact-recover the lost impacts without the usual artifacts.



7. 5BX-DS BLOCK DIAGRAM



8. SPECIFICATIONS and WARRANTY

Type	5-band stereo dynamic range controller
Expansion	OverEasy, to 50 % increase, maximum 20dB doward; five bands (50 Hz, 300 Hz, 2.5 kHz,10kHz crossovers for all signal-processing functions)
Impact recovery	To potential +10 dB, program-dependent; five bands
Compression	OverEasy, from none to infinity, maximum 40 dB of gain
Transition level	Set at 200 mV, ranges from 18mV to 2.2V
Frequency response, no expansion	+/-0.5 dB 20 Hz- 20 kHz
Dynamic range	106 dB, peak-A-weighted noise
Total harmonic distortion (THD)	0.15% any setting
Intermodulation distortion (IMD) IHF or SMPTE	0.15% any setting
Maximum input and output	5V
Power requirement	See rear of the unit.
Dimensions	17-1/8", 3-1/2", 11-7/8"
Weight	10lbs 6oz

Notes

1) Specifications are subject to change.
2) All data are for 20Hz-20kHz unless otherwise specified; line inputs are driven by a source impedance of 1k-ohms and outputs are loaded by 10k-ohms in parallel with 1000pF; all voltages are rms (root-mean-square).
3) Dynamic range is defined as the difference between the maximum 1-kHz rms output signal and A-weighted noise. All noise figures are A-weighted.
4) Frequency-response figures are for pink noise.
5) Inputs and outputs have identical polarity.
7) All dbx home products are designed to be used with components whose output impedance is less than or equal to 5k-ohms. All units are designed to drive loads of at least 5k-ohms in parallel with 1000pF or less.

WARRANTY and FACTORY SERVICE

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

The dbx Customer Service Dept. will help you use this product. For answers to questions and information on problems, write to:

dbx
A Division of BSR
North America Ltd.
71 Chapel St.
Newton, Mass. 02195 USA
Attn: Customer Service

You also may call (617)964-3210 during business hours (USA Eastern Time). The telex is 92-2522.

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.

Printed in Japan
KT5BXDSPAX
0687SG