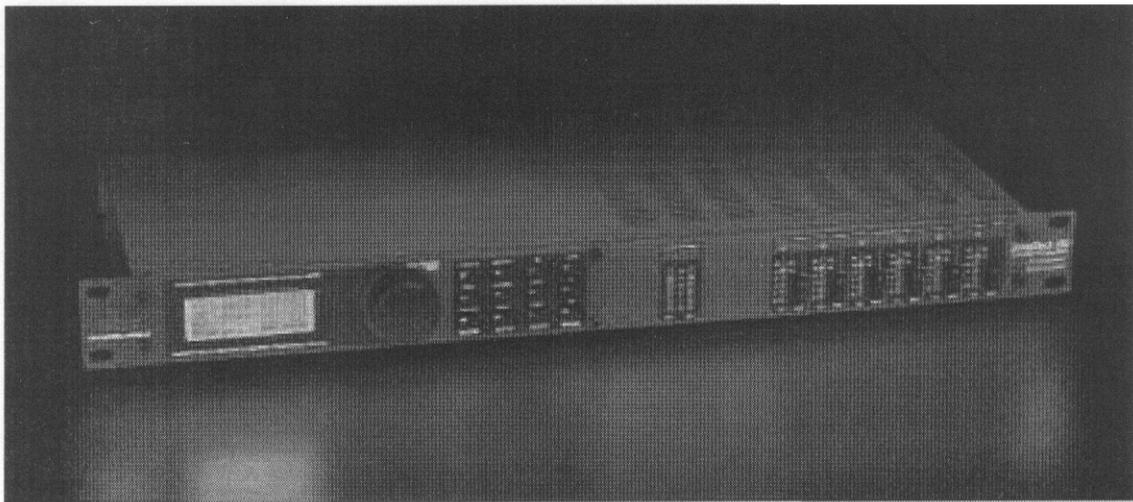


Complete Equalization & Loudspeaker Management System



Complete Equalization & Loudspeaker Management System

User Manual

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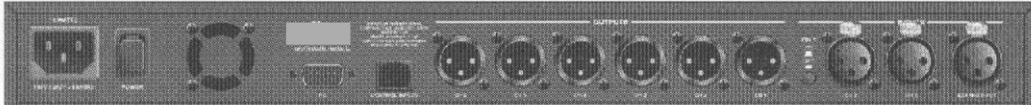
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1.1 Rear Panel Connections



IEC Power Cord Receptacle

The DriveRack 260 comes with a power supply that will accept voltages ranging from 100V-120V at frequencies from 50Hz-60Hz. An IEC cord is included. EU version accepts 220V-240V at frequencies from 50Hz-60Hz.

Power Switch

The Power Switch turns the DriveRack 260 on and off. **Note:** Professional Products recommends that power amplifiers connected to the DriveRack 260, should be powered down prior to cycling the power on the DriveRack 260.

PC Connection

This DB-9 type connection is used to send and receive information to and from the GUI interface.

RS485 Zone Control Input (RJ-45 connector type)

This input connection is used to send information and power to the ZC wall controllers.

Outputs 1-6

The output section of the DriveRack 260 offers six electronically balanced XLR connectors.

Inputs 1-2

The input section of the DriveRack 260 offers two electronically balanced XLR connectors.

Ground Lift Switch

The ground lift switch lifts the pin 1 chassis ground of both input XLR connectors.

RTA Input Jack

This balanced XLR input is used for the connection of an RTA microphone, which allows the user to "Pink" and optimize the EQ settings of any room through the use of the Auto EQ in the Wizard setup assistant.

1.2 Front Panel



LCD Display

The backlit LCD display of the 260 provides the user with all of the vital processing information of the 260 including: signal routing, effect block editing and Wizard Setup functions. The display will also notify the user if any internal clipping is taking place within the unit by displaying "CLIP" in the display.

Data Wheel

The Data wheel of the 260 is used to scroll through the program menu, load programs, select parameters and edit parameter values.

Function Buttons

The function buttons of the 260 allow direct access to all editing and navigating functions of the 260. The functions of the aforementioned buttons are as follows:

- <PREV PG> - is used to navigate back through the various pages of any module block.
- <NEXT PG> - is used to navigate forward through the various pages of any module block.
- <EQ> - is used to move to the EQ modules. Successive presses will move you through the EQ modules in the input section and through EQ modules located in the output section.
- <XOVER> - is used to move to the Crossover module.
- <OTHER> - This button is used to move to the insert module section module which can include modules such as: Notch Filters, Subharmonic Synthesizer and the Advanced Feedback Suppression (AFS) modules.
- <DYNAMICS> - is used to move to the Compressor, Compressor, Gate, Auto Gain Control (AGC), or Limiter modules.
- <DELAY> - is used to move to the Delay modules.
- <I/O> - is used to move to select each one of the 2 input and 6 output modules.
- <PROGRAM> (CONFIG)- is used to enter program mode. When pressed and held, the 260 will enter configuration mode.
- <UTILITY> (METER)- is used to access the the Utility menu. When pressed and held, the 260 will enter METER mode.
- <STORE> (DELETE)- is used to store any program changes. When pressed and held, the 260 will enter the PROGRAM DELETE module.
- <RTA> (WIZARD)- is used to enter the RTA module. When pressed and held, the 260 will enter the Wizard section which includes: SYSTEM SETUP, AFS and AUTO EQ WIZARD.

Input Meters

The 260 provides the user with two independent, six segment Lightpipe™ input meters that range from -30 to +22 dBu. These meters monitor the signal level right after the input module.

Threshold Meters

The threshold meters indicate that the threshold level has been exceeded within the Limiter and Auto Gain Control sections, and gain reduction may be taking place within the specific output channel.

Output Mutes

The six output mute buttons are used for independently muting each output on all six outputs of the 260.

Output Meters

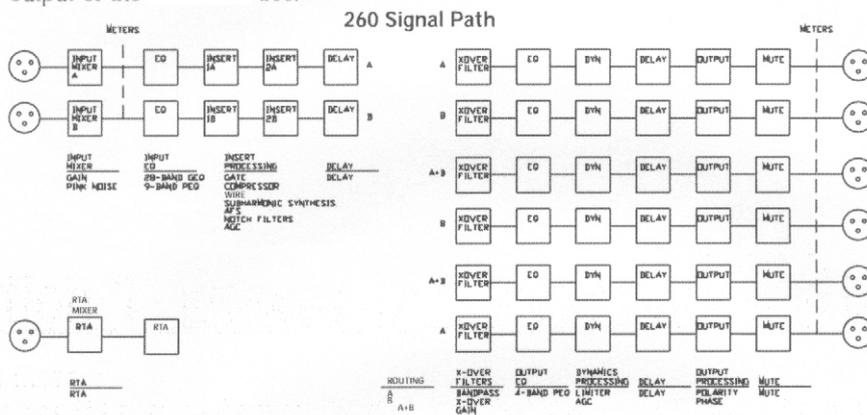
The 260 provides the user with six independent six-segment Lightpipe™ output meters that range from -30 to +22 dBu.

1.3 Quick Start

For those of you that wish to jump right in, the following information has been provided to act as a quick start guide for optimizing performance of the 260.

Signal Path Block Diagram

The following diagram shows the logical and intuitive signal path of the input, effect modules, and output of the 260.



Connections

- When setting up the 260, make connections as follows:

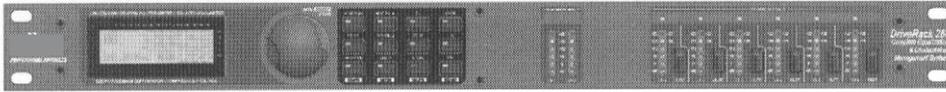
- Always make connections prior to applying power to the unit.
- Connect the output from the sending device (mixer) to either of the two XLR inputs connectors shown below.
- Make output connections from any one of the six output XLR connectors shown below to the input of the selected power amps.



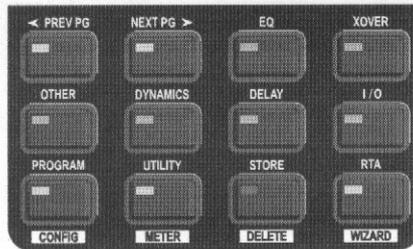
- Connect the selected RTA microphone to the RTA XLR input.
- IMPORTANT- It is recommended that the power amps are turned off prior to cycling power to the 260. Always make sure that your power amps are the last item turned on and the first turned off.**

Once all of the connections have been made and the unit is powered up, you can navigate through the entire signal path of the 260 from the front panel of the unit. The display provides you with a clear and concise overview of each aspect

of the signal path from the input to the output section.



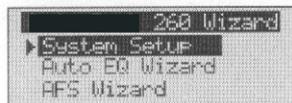
The features of the front panel of the DriveRack 260 are as follows from left to right.
LCD Display- All operational information of the 260 DriveRack is displayed here. The display will also notify the user if any internal clipping is taking place within the unit. The following message will appear: **CLIP**.
Data Wheel - The data wheel is used to scroll through the program menu of the 260 DriveRack. The Data Wheel is also used to perform editing functions to effects and utility menu features.
Button Array - Operational editing is done using this 12 button array. A complete description of each button's functionality is listed below.
Input meters- These two 6-segment LED meters monitor the input level of the 260 DriveRack directly after the input mixer.
Output mutes - These six mute buttons are used to mute the output signal of the 260 DriveRack.
Output meters - These six 6-segment meters monitor the output levels of the 260 DriveRack directly after the output gain stage.
Threshold meters - These six 1-segment meters show that threshold level of the output dynamics has been exceeded.



260 DriveRack Wizard

Now that you have made all of your audio connections and have made yourself familiar with the front-panel navigation of the unit, you can easily optimize your system through the use of the 260 DriveRack Wizard. This feature of the 260 DriveRack allows for quick and accurate venue setups. The menu section of the Wizard offers System setup, Auto EQ and AFS (Advanced Feedback Suppression). The following will walk you through your venue setup.

- From program mode, press and hold the <RTA> /Wizard button and the display will appear as follows:

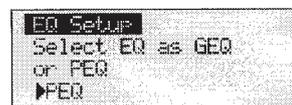


System Setup

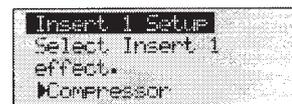
- The arrow will indicate the selected Wizard setup. To select any one of the three options, rotate the <DATA> wheel. If you are performing the System setup, press either the <NEXT PG> button or the <DATA> wheel and the display will appear as follows:



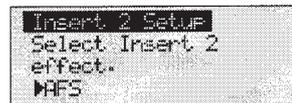
- Simply rotate the <DATA> wheel to select either a Mono or Stereo input configuration. Once you have selected your input option, press the <NEXT PG> button and the display will appear as follows:



- Simply rotate the <DATA> wheel to select either a Graphic or Parametric EQ. Once you have selected your EQ option, press the <NEXT PG> button and the display will appear as follows:



- Rotate the <Data> wheel to select any one of the numerous Insert modules available. Once you have selected your Insert 1 module option, press the <NEXT PG> button and the display will appear as follows:



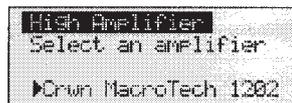
- Rotate the <Data> wheel to select any one of the numerous Insert modules available. Once you have selected your Insert 1 module option, press the <NEXT PG> button and the display will appear as follows:



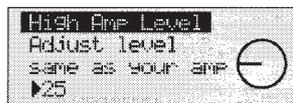
- Rotate the <Data> wheel to select any one of the numerous custom-tuned MAIN speaker options available. If the speaker being used is not specified in the menu, select CUSTOM. Once you have selected your Main speaker option, press the <NEXT PG> button and the display will appear as follows:



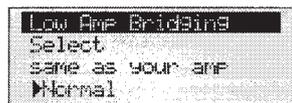
- Rotate the <Data> wheel to select any one of the numerous custom-tuned SUB speaker options available. Once you have selected your SUB speaker option, press the <NEXT PG> button and the display will appear as follows:



- You are now prompted to select a power amp by rotating the <DATA> wheel to select any one of the numerous custom-tuned Amplifier options available. Note that the top line of the display will either read High, Mid or Low depending on your selected speaker setup selections. Once you have selected your Amp tuning option (depending on the amp type), you will select the specified amplifier sensitivity setting if applicable.



- Rotate the <DATA> wheel to select the amplifier manufacturer's specified amplifier sensitivity setting. Once set, press the <NEXT PG> button, and you will now be given the option of optimizing your amp levels with the 260 for . The page will appear something like this:



- You will now rotate the <DATA> wheel to match the same setting as your amplifier of choice. Note that based on your amp selection, the 260 will initially display the recommended setting of that particular amp for obtaining maximum headroom. This is done to match unity gain from the 260 and your amplifier. Note that if Sub Speakers are included in the speaker selection, you will be asked if the sub woofer is bridged or mono. For more information regarding Amplifier gain settings, please refer to the *System Setup and Gain Structure* information located in the appendix section.

Note that you will perform the previous Amplifier settings for Mid and Low if your application requires Mid and Low amplifiers.

- Once you have completed your amp level settings, you will press the **<NEXT PG>** button, where you will be asked to select a bridged or normal setting for your low amp (if used). The display will appear as follows:
- Once you have made a bridged or mono selection, press the **<NEXT PG>** where the unit will prompt **<DATA>** wheel to load your new settings. If you do not wish to load the settings either press the **<PROGRAM>** button or use the **<PREV PG>** button to re-edit your settings. By using your selections, the unit will automatically generate a new program and speaker selection which are used to choose the correct crossover type, parameters, speaker compensation EQ and delay are also adjusted by the speaker selection. Amplifier parameters are used to set the limiters to stop amplifier clipping and balance out the crossover levels. You may find that you want to re-adjust the crossover levels based on your taste and type of music.

Auto EQ WIZARD

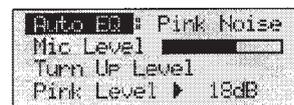
- Once you have custom-tailored your system setup, you can now proceed to EQ your system. The Auto EQ Wizard automatically adjusts the response of the system by producing pink noise and adjusting the Graphic EQ until the RTA matches a selected response. From the 260 Wizard menu, rotate the **<DATA>** wheel until the display appears as follows:



- Either press the **<NEXT PG>** button or rotate the **<DATA>** wheel and the display will read:



- You can now select any one of the several different Frequency responses for the Auto EQ. The options are: Flat (0), and Response A-D, and Low, Medium and High Precision. Once you have selected your desired EQ Frequency response, press the **<NEXT PG>** button and the display will appear as follows:



- You will now proceed to "Pink" the room by adjusting the Pink level. The range of bar graph is -30dBu to +20dBu. Connect an RTA-specific microphone to the rear-panel RTA mic input.

to. Be certain to raise the pink noise level to the level to be used during the performance. Once the Pink level has been adjusted to the desired volume. The mic level indicator will register the signal level. Press the **<NEXT PG>** button and the Auto EQ sequence will begin. The display will either show the graphic EQ or the RTA. Rotating the **<DATA>** wheel clockwise and counter clockwise will toggle between the two modes. You can also select either mode to default to in the Utility menu. Regardless, the display will appear something like this:



- At this point, the 260 will automatically EQ the room. If you are using independent left and right graphic EQs, you will auto EQ each side independently. If you are using a stereo-linked EQ, both sides will be EQ'd simultaneously. Auto EQ can be aborted at any point in the process by pressing the **<NEXT PG>** button. Upon completion of the Auto EQ Wizard, you can return to program mode by releasing the **<RTA Input>** button and pressing the **<PROGRAM>** button.

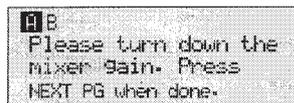
For more information regarding the Auto EQ section, please refer to the Auto EQ Optimization Tips information located in the Appendix section.

AFS

- The 260 also offers its exclusive AFS (Advanced Feedback Suppression) module which is located within the INSERT module section of select or user-created configurations. This unique feature now makes unwanted feedback in a PA system a thing of the past. The AFS Wizard will lead you through the setup of of the fixed filters of the AFS module. The fixed filter mode is designed to place notch filters as you introduce feedback by opening up your mics and slowly increasing the gain. Because the fixed mode is sensitive, it is important not to present an external music source such as CD player or other audio signal into the system. From the Wizard menu, rotate the **<DATA>** wheel until the display appears as follows:

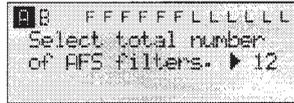


- Press the **<NEXT PG>** button and the display will read:



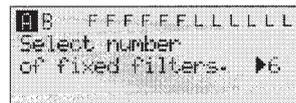
- Once the gain level of the mixer has been turned down, press the **<NEXT PG>** but-

ton and the display will read:



FB FFFFFFFLLLLL
Select total number
of AFS filters. ▶ 12

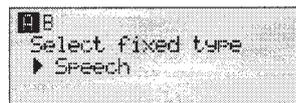
- You will now use the <DATA> wheel to select the number of fixed filters. This will range from values 0-12. The total number of filters will stay at 12, and the number of live filters will be = Total Num Filters - Num Fixed. Live and Fixed filter types differ in that FIXED mode filters are automatically assigned to a frequency creating feedback, thus remaining at that frequency until cleared by the user. In LIVE mode, live filters automatically detect and remove feedback frequencies in the presence of audio (music or speech). When all of the live filters have been used, they begin to round robin. Essentially this means that the first filter set is replaced where a new feedback is detected and notched out. This mode is useful because feedback frequencies may change as the microphone is moved, and/or as the characteristics of the venue change.



FB FFFFFFFLLLLL
Select number
of fixed filters. ▶ 6

- At this page, you will now select the number of fixed filter. Once the desired fixed number of filters has been selected, press the <NEXT PG> button and the display will read:

The Fixed/Live filter usage will be indicated at the bottom of each page of the feedback elimination effect. 'F' indicates an available fixed filter, and 'L' indicates an available live filter. A blocked out F or L indicates a filter that is set, or in use. Once the desired number has been selected, press the <NEXT PG> and the display will read:



FB
Select fixed type
▶ Speech

- These types pertain to the Q, sensitivity, and algorithm type. The filter is established by using the formula: $Q = \text{Freq} \div \text{Bandwidth}$. This means that a higher Q will produce a filter that is more narrow. Values are: Speech (Bandwidth = 1/5 octave and Q=7.25) Music Low (Narrow notch filter, Bandwidth = 1/10 octave and Q=14.5), Music Medium (Very Narrow notch filter, Bandwidth = 1/20 octave and Q=29) Music High (Ultra Narrow notch filter, Bandwidth = 1/80 octave and Q=116). To guarantee that feedback is suppressed at lower frequencies, the AFS may place wider notch filters at these lower frequencies (below 700 Hz). Once the desired fixed type has been selected, press the <NEXT PG> button and the display will read:

```
A B F F F F F L L L L L L
Slowly Increase the
mixer gain to
desired level.
```

- You are now prompted to raise the output gain of the mixer to the level of the performance. At this point, mics should be open (on) and you should slowly increase the mixer gain. Once the desired level has been set and all of the fixed filters have been assigned, the unit will automatically move you to the page that indicates the fixed filter setup has been completed. If you have reached the performance level setting and all of the fixed filters have not been used, you may want to return to the page that selects the number of fixed filters and re-adjust the number of fixed in order to provide you with additional live filters. Regardless, once you have completed the setup, the display will read:

```
A B F F F F F L L L L L L
Fixed filter setup
done for Channel A.
In LIVE mode.
```

- To return to program mode, simply press the <PROGRAM> or <NEXT PG> button. For more information regarding feedback elimination, please see the AFS parameters of the Detailed parameters section.

2.1 Basic Navigation Modes

Navigational aspects of the 260 is simple and as follows. **1. FX buttons** - This array of 12 FX buttons is your primary mode of directly accessing any effect module. **2. NEXTPG & PREVPG** page buttons - Successive presses of the **NEXTPG** or **PREVPG** page buttons will move the user from one page to the next in an effect block. **3. Data Wheel** - The Data Wheel is used to move through the program menu of the 260. The Data wheel is also used to change the values of the selected parameter by simply rotating the wheel. Pressing the Data wheel will toggle between the available parameters on any selected page of the currently selected effect module.

2.2 Effect Button Array Overview



PREVIOUS PAGE - Moves to the previous page in the currently selected effect menu.



NEXT PAGE - Moves to the next page in the currently selected effect menu.



EQ - Selects the EQ effect menu. This is the EQ section located prior to the crossover section. Successive presses will rotate through the various pre-crossover 28 band EQ and Post-xover PEQ section modules.



XOVER - Selects the Crossover section.



OTHER - This button is used to move to the module insert section module which includes the Notch filter, Subharmonic Synthesizer, AFS (Advanced Feedback Suppression) and Wire (no parameters) modules.



DYNAMICS - Selects the Dynamics effect sections. Successive presses will move from the Compressor, Gate and AGC (pre-xover) to the AGC and Limiter (post-xover).



DELAY - Selects the Alignment Delay effect module. successive presses will rotate through the Pre and post Delay modules.



I/O - Selects the input and output parameter editing section for all inputs and outputs. Successive presses will move through each input and output.



PROGRAM (Config) - This button is used to enter the Program screen from any sub section within the unit when pressed. When pressed and held, you will enter Config mode.



UTILITY(Meter) - Selects the Utility menu of the 260 DriveRack. When pressed and held, the 260 will enter METER mode.



STORE(Delete) - The store button is used to store program edits. When pressed and held, the 260 will enter the PROGRAM DELETE module.



RTA (Wizard) - This enters the RTA mode, or when held, enters the 260 Wizard setup menu which includes: System Setup, Auto EQ setup and AFS Wizard.

2.3 Navigating the EQ Section (28-GEQ and PEQ)

To edit the parameters of the EQs used in a selected program, simply use the following procedure. From program mode, press the EQ button to reach the EQ module to be edited. Successive presses of the EQ button will move through each channel. Navigate through the Pages of the selected EQ section by depressing "Next Page" or "Prev Page" successively until arriving at the desired Page.

The EQ button toggles through the EQs used in each channel of the selected program menu

EQ (button) → **GEQ** (button) or **PEQ** (button)

GEQ parameters:
 GEQ On/Off
 Flatten/Restore
 Freq: 31.5Hz-18kHz
 Gain: -12dB to 12dB

PEQ parameters:
 PEQ On/Off
 Flatten/Restore
 Bell: HSelf, LShellf, LHSheff, ...
 B1 Freq: 20Hz-20kHz
 Gain: -12dB to 12dB
 Q: 20 to 16.0
 B2 Freq: 20Hz-20kHz
 Gain: -12dB to 12dB
 Q: 20 to 16.0
 B3 Freq: 20Hz-20kHz
 Gain: -12dB to 12dB
 Q: 20 to 16.0

Successive presses of the Data wheel will select effect parameters within the currently selected page.

2.4 Navigating the XOVER Section

To edit the parameters of the Crossover used in a selected program, simply use the following procedure. From program mode, press the X-OVER button. Once you have reached the Crossover module, Navigate through the Pages of the selected Crossover module by pressing the "Next Page" or "Prev Page" successively until arriving at the desired Page.

The XOVER button toggles through the XOVER used in each channel of the selected program menu

XOVER (button)

XOVER parameters:
 Low Pass: Freq: 19.7kHz to Out Slope: BS BW/LR (6, 12, 18, 24, 36, 48)
 High Pass: Freq: 20.1kHz to Out Slope: BS BW/LR (6, 12, 18, 24, 36, 48)
 Gain: -20 to 20dB
 Repeat, for each crossover band

Successive presses of the Data wheel will select effect parameters within the currently selected page.

2.5 Navigating the Other Section

From program mode, press the Other button. Successive presses of the Other button will move you to each of the various insert modules available. Pressing the Data Wheel will select the effect parameter to be edited.

The NEXT and PREV buttons scroll through the pages of selected module.

OTHER

Subharmonic Synthesizer

- Subharmonic - On/Off
- Subharmonics % 0-100
- 24-36Hz Level - 24-36Hz
- 36-56Hz Level - 36-56Hz

OTHER

Advanced Feedback Suppression (AFS):

- AFS On/Off
- AFS Clear
- Mode - Fixed/Live
- Type - Speech, Low, Med and High
- Number of filters 0-12
- Number of filters fixed 0-12
- Live filter Lift - On/Off
- Lift After - 0-60

OTHER

Notch Filter

- Notch - On - Off
- Flatten/Restore
- Freq 1-6
- 19 7Hz-20 2#Hz
- Gain - -36dB - +6dB
- Q - 16, 32, 64, 128



Successive presses of the Data wheel will select effect parameters within the currently selected page.

2.6 Navigating the Dynamics Section

From program mode, press the comp/limiter button to move to either the Dynamics module. Once you have reached the Dynamics module, successive presses of Dynamics button will move through each channel that utilizes either a Compressor (pre Crossover) or Limiter (post-crossover) module. Navigate through the Pages of the selected compressor or Limiter module by pressing the "Next Page" or "Prev Page" buttons successively until you arrive at the desired Page.

The Comp/Limiter button toggles through the AGC Compressor or Limiter modules used in each channel of the selected program

DYNAMICS

COMP

- Comp On/Off
- Auto On/Off
- Over Easy Off, 1-10
- Threshold -40 to -20dB
- Ratio 1:1 to x:Inf:1
- Gain -20 to 20dB
- Attack 0.1 to 200ms
- Hold 30 to 200ms
- Release 360 to 5.0dB/s

GATE

- Gate On/Off
- Ratio 1:1 to x:Inf:1
- Threshold -50-22dB
- Attack 0.1 to 200ms
- Hold 30 to 200ms
- Release 360 to 5.0dB/s
- Max Atten 0 to Inf

AGC(Pre)

- AGC On/Off
- Target -20-20dBu
- Gain 1 to 20dB
- Window 1 to 10dB
- Hold 30 to 200ms
- Low Thresh -60to-30dB
- Attack 20 to 5 sec
- Release 30 to 1.0dB/s

LIMITER

- Limiter On/Off
- Over Easy Off, 1-10
- Threshold -40-20dB
- PeakStop On/Off
- Auto On/Off
- Overshoot 2 to 6dB
- Attack 0.1 to 200ms
- Hold 30 to 200ms
- Release 360 to 5.0dB/s

AGC(Post)

- AGC On/Off
- Target -20-20dBu
- Gain 1 to 20dB
- Window 1 to 10dB
- Hold 30 to 200ms
- Low Thresh -60to-30dB
- Attack 20 to 5 sec
- Release 30 to 1.0dB/s



Successive presses of the Data wheel will select effect parameters within the currently selected page.

2.7 Navigating the Delay Section

From program mode, press the Delay button. Pressing the Data Wheel will select the effect parameter to be edited. Successive Presses of the Delay button will move you through pre and post crossover delays.

DELAY

DELAY



Delay - On/Off
 Length - Delay Time - Course, Fine
 Units - Seconds, Feet, Meters



Successive presses of the Data wheel will select effect parameters within the currently selected page.

2.8 Navigating the Utility/Meters Section

From program mode, press the UTILITY button. Pressing the Data Wheel will select the effect parameter to be edited. Pressing and holding the Utility button will enter you into the meter menu.

UTILITY

<PREV PG



NEXT PG>



UTILITY



LCD Contrast 1-16
AEO Plot - RTA/GEQ

PUP Prog. - Current/Store
PUP Mute - Current/Store

ZC Panel - 1-6
(Store) - Edit Panel

Security Level - Mobile Select
Security Level - Low, Med, High

260 Device Level-
Low, Med, High

Edit High Password
Edit Medium Password

Program List Size- 1-10
List Index - 1-10

Program Change mode
Normal/Program
Program Number Lock 1-25

Output Jumpers - 1-6
Setting - 14, 22, 30dB

METERS

Noise gate-
AGC

Limiter 1-3

Limiter 4-6

Zone Controller-
1-3

Zone Controller-
4-6

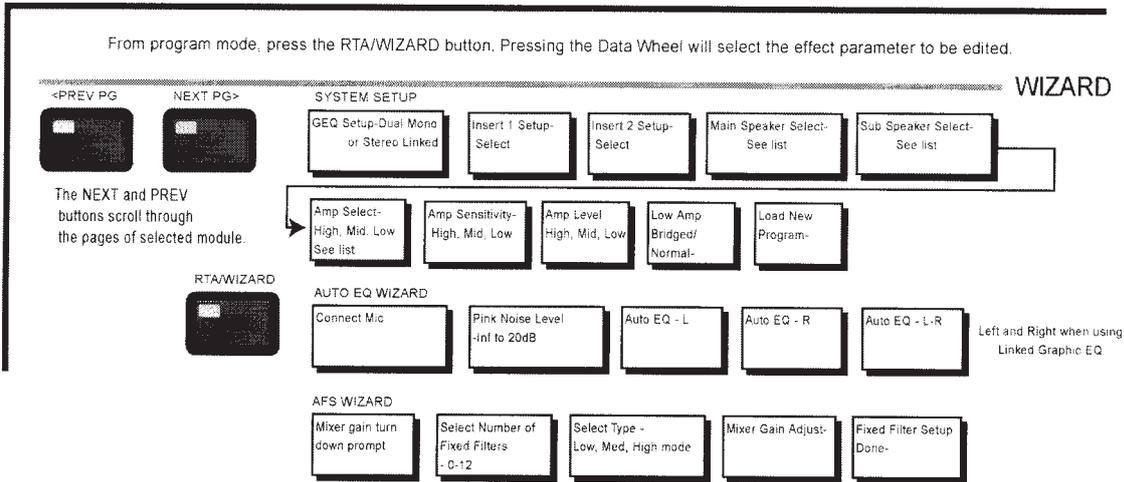
Output Trims
1-3

Output Trims
4-6



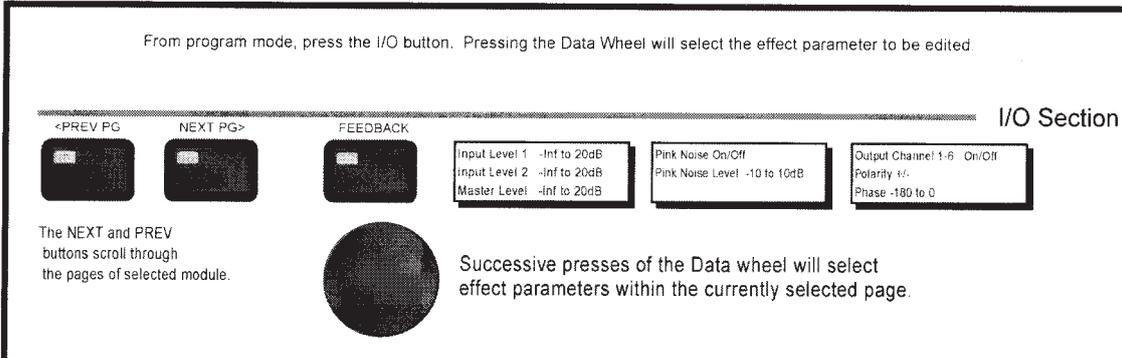
Successive presses of the Data wheel will select effect parameters within the currently selected page.

2.9 Navigating the Wizard Section



Successive presses of the Data wheel will select effect parameters within the currently selected page.

2.10 Navigating the I/O Section



The Configuring section of the 260 will be your key to successful navigation of the configuration functions of the . The following information provides descriptions about program functions and in depth configuration options of the 260 DriveRack.

3.1 Program Definition

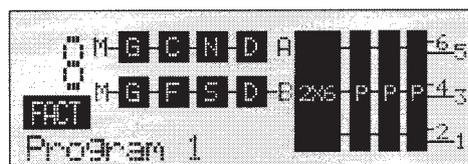
The first step in understanding the programming capabilities of the is to understand the components of a complete "program." Within an individual program, there are several levels of editing that make up the complete program. When initially entering a program, you will be at the "program" mode level. This level supplies the user with current program information such as: current signal path, effect usage, and program name. From this point, the 260 gives you the option of entering subsequent levels of operation that are dedicated to program editing. These levels include Configuration mode and Effect Edit mode. All of these components combined, make up the conventional "program", and they are all unique to each individual program. The Utility menu mode is accessed via the utility menu, and is not part of a single program.

3.2 Navigating Factory Programs

From the factory, the 260 is shipped with 25 factory programs that have been designed to accommodate virtually any sound reinforcement and installation application. The factory programs offer a clear and concise explanatory title to get you up and running in a timely manner. These programs can also be used as templates or starting points for the user to create custom programs.

Selecting Programs:

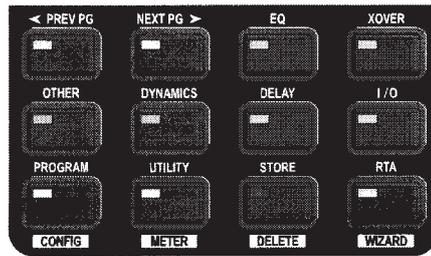
The quickest way to get up and running with the is to use any one of the factory programs that are available in the box. To select a factory program, (from program mode), use the **Data Wheel** to scroll through the various factory programs. As each factory program is selected, the display will clearly indicate the title that is directly related to a specific application. Once a program is selected, press the **PROGRAM/CONFIG** button to load the program. The display will appear something like this:



Navigation Modes

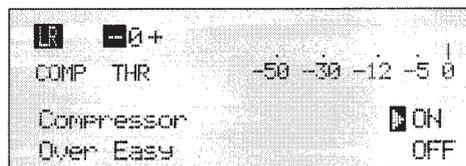
Once you have selected a program with a configuration that accommodates your application, the **DATA** wheel offers instant access to edit effect types within the configuration.

To instantly access an effect module, simply press the corresponding button in the button array for the desired module.



3.3 Editing Factory Programs

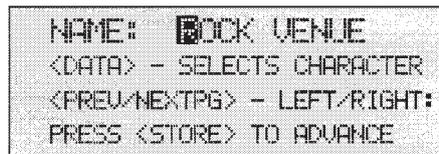
Once you have reached the module that you wish to edit, use the **PREV PG** and **NEXT PG** buttons to move through the pages within the module. The **DATA** wheel is used to edit parameter values. The following illustration shows an example of the Dynamics module in edit mode:



Note that the cursor indicates the currently selected parameter for editing. To select parameters to edit from the current page, press the **DATA** wheel until the cursor is next to the parameter that you wish to edit.

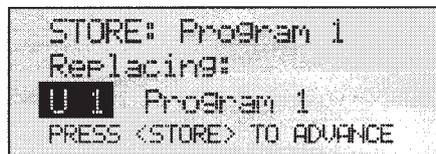
3.4 Saving Factory Programs Changes

Once you are satisfied with the changes that have been made to a factory or user program, the allows you to save these changes to the program as a custom USER program by pressing the **STORE** button. The display will appear something like this:



```
NAME: BOOK VENUE
<DATA> - SELECTS CHARACTER
<PREV/NEXTPG> - LEFT/RIGHT:
PRESS <STORE> TO ADVANCE
```

- Rotating the **DATA** wheel will change the characters in the currently selected position.
- Pressing the **DATA** wheel will toggle between upper and lowercase letters, numbers or symbols.
- Use the **PREV PG** and **NEXT PG** button to move character positions.
- Once the desired title has been written, press the **STORE** button. The display will now appear something like this:



```
STORE: Program 1
Replacing:
U 1 Program 1
PRESS <STORE> TO ADVANCE
```

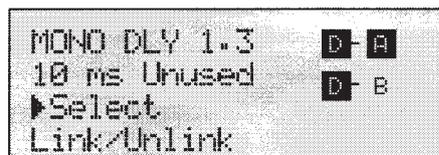
- Rotate the **DATA** wheel to select the program to be replaced and press the **STORE** button and the existing program will be replaced with the new program. All edits will be saved.

The 260 DriveRack will store up to 25 user programs in addition to the 25 factory programs. Note: Factory programs cannot be over-written. Replacing a factory program will move the program index to a user program.

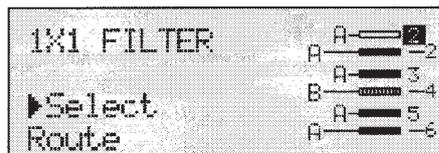
B modules. Note that the same EQ types must be selected to link. Use the **PREV PG** and **NEXT PG** buttons to move through A and B, and then to the next module screen which will appear something like this:



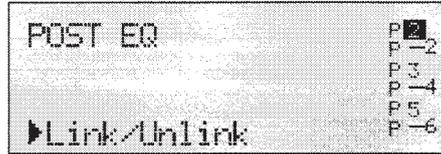
- You are now in the Pre-Crossover Insert module. The arrow (in correspondence with the Module 1 or 2 indicators, along with the A and B indicators indicate which module block is currently selected. Rotate the **DATA** wheel to select either Wire, AGC, Compressor, AFS, Noise Gate or Subharmonic Synthesizer. Pressing and then rotating the **DATA** wheel lets you link or unlink the A and B modules. Note that the same Effect types must selected to link. Use the **PREV PG** and **NEXT PG** buttons to move through A and B, 1 and 2 and then to the next module screen which will appear something like this:



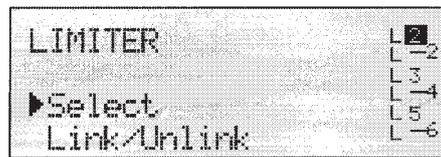
- You are now in the Pre-Crossover Delay module. The arrow (in correspondence with the A and B indicators indicate which module block is currently selected. Rotate the **DATA** wheel to select Delay type and time. Pressing and then rotating the **DATA** wheel lets you link or unlink the A and B modules. Note that the same Effect types must selected to link. Use the **PREV PG** and **NEXT PG** buttons to move through A and B, and then to the next module screen which will appear something like this:



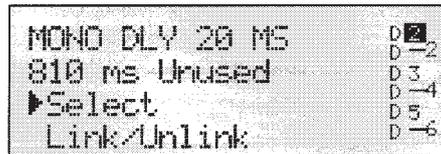
- You are now in the Crossover module. The arrow (in correspondence with the with the A and B indicators indicate which module block is currently selected. Rotate the **DATA** wheel to select Crossover type. Pressing and then rotating the **DATA** wheel lets you select the route path. You can route either Input A, Input B or the summed Input A+B to any mono input crossover. A stereo crossover can only have A and B routed to its two inputs. Use the **PREV PG** and **NEXT PG** buttons to move through A and B, Outputs 1-6 and then to the next module screen which will appear something like this:



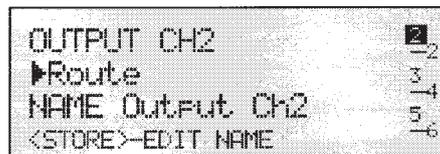
- You are now in the Post-Crossover EQ module. The arrow indicates that EQ type is selected. Rotate the **DATA** wheel to select the Parametric EQ type. Use the **PREV PG** and **NEXT PG** buttons to move through outputs 1-6, and then to the next module screen which will appear something like this:



- You are now in the Post-Crossover Dynamics module. The arrow indicates that either the Limiter or AGC type is selected. Rotate the **DATA** wheel to select the Dynamic type. Use the **PREV PG** and **NEXT PG** buttons to move through outputs 1-6, and then to the next module screen which will appear something like this:



- You are now in the Post-Crossover Delay module. The arrow (in correspondence with the with the output 1-6 indicators indicate which output delay module block is currently selected. Rotate the **DATA** wheel to select Delay type and time. Pressing and then rotating the **DATA** wheel lets you link or unlink the output delay1-6 modules. Use the **PREV PG** and **NEXT PG** buttons to move through Outputs 1-6, and then to the next module screen which will appear something like this:



- You are now in the Output Route and naming module. The arrow (in correspondence with the with the output 1-6 indicators indicate which output module block is currently selected. Rotate the **DATA** wheel to select Output route. Pressing the **STORE** button will move you to naming page which appears something like the following display:

```
NAME: Output Ch2
<DATA> - SELECT CHARACTER
<PREV/NEXTPG> - LEFT/RIGHT
<STORE>-EDIT/<UTIL>-EXIT
```

- Once all of the naming assignments have been made, press the UTILITY button to return to Configuration mode. If all Configuration modifications you can press the PROGRAM button to return to program mode where you will proceed to Store your new USER configuration.

3.6 Saving Configuration Changes

Once changes have been made to the current Configuration, changes can be saved by pressing the **STORE** button and the display will appear like this:

```
NAME: BOOK VENUE
<DATA> - SELECTS CHARACTER
<PREV/NEXTPG> - LEFT/RIGHT:
PRESS <STORE> TO ADVANCE
```

At this point, enter the new name for your configuration. If you wish to abort at this point, press the **PROGRAM/CONFIG** button.

The 260 offers complete editing flexibility, by offering in-depth control over every parameter within each effect module. The following section will provide you with descriptions and explanations of all parameters within the 260.

4.1 Pre-Crossover EQ

The 260 Pre-Crossover EQ section may be configured as a single or linkable 28 band graphic EQ or 9-Band PEQ.

GEQ

EQ On/Off

Turns the EQ on and off.

Flatten/Restore

This parameter either flattens the GEQ or restores the GEQ to the last setting before flattening. The unit allows you to leave the EQ edit window and return without losing the edited EQ settings.

Frequency (F) 31.5Hz to 16.0kHz

This parameter allows you to select any one of the 28 available frequencies.

Gain (G) -12 to +12 dB

This parameter allows you to adjust the level of any one of the 28 bands of the GEQ in .5 dB increments.

PEQ

EQ On/Off

Turns the PEQ on and off.

Flat Set/Undo

This parameter either flattens (set) or restores (undo) all bands to their original settings.

Band 1 Frequency 20 to 20kHz (Low Shelf)

Selects the frequency of the low pass shelf parametric EQ.

Slope 1 3-12dB/Octave

Sets the slope of the low shelf parametric EQ.

Level 1 -12 to 12 dB

Sets the overall gain of the shelf EQ.

Band (2-8) Frequency 20 to 20k

Selects the frequency of the selected band of the parametric EQ.

Q (2-8) 0.20 to 16.0

Adjusts the Q of the selected band of the parametric EQ.

Level (2-8) -12 to 12 dB

Sets the overall level of the selected parametric EQ frequency.

Band 9 Frequency 20 to 20k (High Shelf)

Selects the frequency of the high shelf parametric EQ.

..

Slope 9 3-12dB/Octave

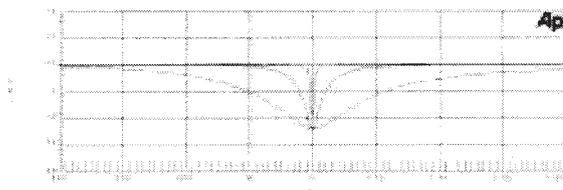
Sets the slope of the high shelf parametric EQ.

Level 9 -12 to 12 dB

Sets the overall gain of the high shelf parametric

4.2 Feedback Eliminator

The 260 offers the exclusive patent pending AFS (Advanced Feedback Suppression) feedback elimination module. Feedback is caused when a microphonic signal such as a guitar pickup or microphone is reproduced by an amplification and is repeatedly picked up in phase. The AFS uses Precision Frequency Detection and state-of-the-art processing to determine the exact portions of a given frequency of your feedback that need to be removed (instead of taking out large sections of your sound). The AFS module of the 260 allows the user to optimize the elimination of feedback. In the past, graphic equalizers were used to eliminate feedback from a system. This was an acceptable method for eliminating feedback, but when this method was precision tested, the result clearly showed that a single 1/3 octave EQ slider was removing approximately half of the signal power. With the AFS, the module removes the feedback automatically and the proprietary, precision AFS filters remove only a fraction of the frequency spectrum. The following diagram shows AFS as opposed to competing, competitive feedback eliminators and conventional graphic EQs:



AFS On/Off

Turns the AFS module on and off. If AFS is Off, the filters are bypassed, and the algorithm is halted (the filters are not updated). If AFS is On, the filters are active, and they are updated according to the current selected mode (Fixed or Live).

Clear Live/All

This parameter clears the filters. If Clear Live is selected, then (if invoked) the live filters are reset. If Clear All is selected, then (if invoked) all of the filters are reset. When either Clear Live or Clear All is selected, the third parameter row displays "Start w/ Data Wheel." If Clear (none) is selected, then nothing is displayed on this row. When the user moves to this third row and turns the Data Wheel (when Clear Live or Clear All is selected) then the filter reset is invoked.

Mode - Live or Fixed

When the mode is Fixed, the algorithm updates only the fixed filters. When the mode is Live, the algorithm updates only the live filters. In FIXED mode, the filters are automatically assigned to a frequency creating feedback, are stored remain with the program and at that frequency until cleared by the user. Fixed mode is used before the performance without any input signal. In LIVE mode, the live filters automatically detect and remove feedback during the performance. When all of the live filters have been used, they begin to round robin. Essentially this means that the first filter set

is replaced where a new feedback is detected and notched out. This mode is useful because feedback frequencies may change as the microphone is moved, and/or as the characteristics of the venue change. Note- Only the fixed filter settings will be stored with the new program.

Type - Speech, Low Music, Medium Music and High Music

If Fixed or Live mode is chosen, the text will read "Type." The options will be Speech, Music Low, Music Medium and Music High. These types pertain to the Q, sensitivity, and algorithm type. Values are; Speech (Bandwidth = 1/5 octave and Q=7.25) Music Low (Bandwidth = 1/10 octave and Q=14.5) Music Medium (Bandwidth = 1/20 octave and Q=29) Music High (Bandwidth = 1/80 octave and Q=116). Note: To guarantee that feedback is suppressed at lower frequencies, the AFS may place wider notch filters at these lower frequencies (below 700 Hz).

Number Fixed - 0-12

This will range from values 0-12. The total number of filters will stay at 12, and the number of live filters will be = Total Num Filters - Num Fixed. If this is changed before the filters are reset, then the filters will be reset one by one as the number changes. For example, if the number of Fixed filters goes down, then the last fixed filter set will be reset. Likewise, if the number of Fixed filters goes up (and thus the number of live filters goes down), then the last live filter set will be reset. The Fixed/Live filter usage will be indicated at the bottom of each page of the feedback elimination effect. 'F' indicates an available fixed filter, and 'L' indicates an available live filter. A blocked out F or L indicates a filter that is set, or in use.

Live Filter Lift (On/Off)

This parameter turns the Live Filter Lift on and off.

Lift After - 5 sec to 60 min

This parameter allows the user to setup the box so that the Live filters will automatically be removed after a set time (as indicated by the "Lift After" parameter). It ranges from 5 seconds to 60 minutes. This feature is useful if the microphone being used is moved or the characteristics of the venue change over time. As example; a filter placed minutes ago will not be presently preventing feedback. This feature removes unnecessary filters from the spectrum to increase sonic quality. If the feedback is still there (after the filter is removed), it will catch it and notch it out the same.

Total Number of Filters 1-12

This parameter selects the number of filters being used

4.3 Subharmonic Synthesizer

The Subharmonic Synthesizer module 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 and broadcasting. The Subharmonic Synthesizer module'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.

Sub-Harmonic Synth - On/Off

Turns the Subharmonic Synth module on and off.

Sub-Harmonics Synth - 0 to 100%

This parameter sets the overall level of the Subharmonic Synthesizer.

24-36Hz and 36-56Hz (Subharmonic Synthesis) Level - 0 to 100%

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), 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.

4.4 Gate

Gate On/Off

Local (per band control) or global on and off.

Threshold -50 to 20 dBu

The threshold is the volume level at which the gate opens. Anything above the threshold passes, while signal that is lower than the threshold is attenuated. Beware, setting the threshold to high can cut off the tail end of signals as they fade out (the sustain of a guitar note, a held piano chord, a reverb tail, etc.).

Ratio 1:1.0 to 1:15

This is where you decide how much downward expansion you want. This ratio works opposite from that of the compressor or limiter. If a ratio of 1:4 is selected, a signal that is 1dB below the threshold will be reduced in gain so that it becomes 4dB below the threshold.

Attack 0.1 to 200 m Sec

As the signal reaches the threshold area, the Attack control sets the speed at which the gate opens. Use very fast attack times to catch the fronts of transient signals.

Hold 0 to 500 m Sec

The Hold control sets the amount of time the gate is held open after the signal passes below the threshold point.

Release 360 to 5 dB

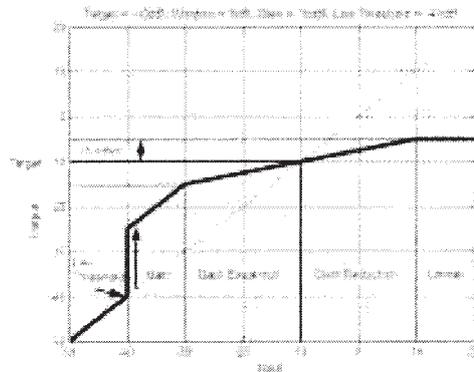
Release sets the speed at which the gate "closes" or attenuates when the end of the Hold time is reached.

Max ATT 0 to Inf. dB

This sets the maximum amount of attenuation for the gate.

4.5 Automatic Gain Control (AGC)

The AGC is used to keep the average level of a signal at a constant level. This is done by selecting a desired Target output level and Window. The AGC keeps the signal within the Window about the selected Target by slowly adjusting the gain. The maximum gain that can be applied to the signal is selected by the Gain parameter. When the input signal falls below the Low Threshold the AGC releases the gain and returns to unity. This prevents the AGC from adding gain when there is no signal present and raising the system noise floor. High level signals are reduced by a fast limiter to prevent distortion by clipping. The AGC Threshold meters show what region of the AGC the input signal is in. The T (yellow) indicates the signal is within the Window. A + (red) indicates the signal is going into the Limiter. A - (green) indicates the AGC is adding maximum Gain and is at or below the Window. When the Threshold meter is off the signal is below the Low Threshold.



AGC: On/Off

Turns the AGC module On and Off.

Target: (Targ) -20 to 20 dB

The Target parameter defines where you would like the average level of the AGC output to be. If the average level of the signal rises above the Target the gain will be reduced. For signals with an average level below the Target the gain will be increased.

Gain: 1 to 20dB

This adjusts the maximum amount of gain that can be added by the AGC.

Window: 1 to 10dB

This adjusts the amount of variation in the output

Low Threshold: -60 to -30dB

The Low Threshold sets a lower limit to the AGC. This prevents the AGC from adding gain to low level signals or noise.

Attack: 0.20 to 5 Seconds

This adjusts how fast the AGC will increase gain.

Release: 30.0 to 1 dB/Second

This adjusts how fast the AGC will reduce gain.

..

4.6 Notch Filters

The notch filter is the perfect tool for dropping out undesirable frequencies that may appear in the input signal. Up to six Notch filters are available for all six outputs.

Notch On/Off

Turns the notch filters on and off.

Frequency (1 to 6) 20 to 20K

Selects the desired notch filter frequency of the selected notch filter.

Gain -36 to 6 dB

Sets the level of the selected notch filter. Set to +6dB to help find unwanted feedback, then set to -3dB to -36dB to remove.

Q 16 to 128

Selects the Q of the selected notch filter.

4.7 Crossover

The Crossover is used to divide the input signal into several frequency bands. This allows the user to drive the speaker in its optimum frequency range and send each output separately for more efficient use of amplifier power. The 260 Crossover can be configured as a 2x3, 4, 5, or 6. Appendix A.5 illustrates each of the available crossovers. The High-Pass or Low-Pass filter being edited is indicated by the highlighted edge in the graphics area.

Frequency

Adjusts the frequency of the Low Pass filter from 20 to 20KHz.

Type

Selects the filter type. Selections are: BS 6, 12, 18, 24 Bessel type filter, BW 6,12,18,24 for Butterworth type filter with slope of 6, 12, 18 or 24 dB/Octave and LR12, 24 for Linkwitz-Riley type with slope of 12 or 24 dB/Octave.

Gain

Sets the level of the selected crossover band. Range is from Infinity to +20dB.

4.8 Post-CROSSOVER PEQ

In addition to the pre-crossover EQ options within the signal path, the 260 also offers a 2 or 3-band parametric EQ after the crossover section. The parameters for the post-crossover EQ are as follows and are user adjustable.

PEQ On/Off

Turns the PEQ band on and off.

The following figure shows the constant Q parametric filter.

Threshold (T) -40 to +20dBu

Threshold is the signal level at which the unit starts to compress the signal. If the level is set to -10 dBu, than any signal larger than -10 dBu is compressed while any signal that has a level that is lower than -10dBu is left at the same signal level. Light compression is where only the loudest parts of the signal go over the threshold. Very heavy compression can be achieved by setting the threshold low enough that almost the entire signal content is over the threshold. For most signals the most natural compression is achieved when most of the signal content remains just below the threshold and only the peaks cross the threshold.

Ratio (R) 1.0 to Inf:1

Ratio is the amount the unit reduces the signal level of the sound that is above the threshold. A 2:1 ratio means that if the incoming signal is 2dB over the threshold the unit will compress the signal, and outputs a signal that only goes 1dB over the threshold. For light compression choose a lower ratio, while a heavy compression requires a higher ratio. A setting of Inf:1 makes the compressor act as a limiter.

Gain (G) -20 to +20 dB

This parameter is used to compensate for the gain lost during compression. By using heavy compression on a signal and then boosting the signal with the output gain, the user can create a signal that sounds much louder than it actually is.

Auto On/Off

When Auto Mode is on, the 260 automatically sets the Attack, Hold, and Release times for the signal. The auto mode constantly adjusts these parameters in real time for optimum performance from the unit. You will find that for most applications, not only is using the auto mode faster and easier but by letting the unit constantly tweak these parameters for you will result in a better end result (try and hit a snare exactly the same for three minutes).

Attack 0.1 m Sec to 200 m Sec

Attack is how fast the compressor starts to compress the signal after it passes the threshold. Fast attack is useful when dealing with lots of fast transients. The attack control is not active when in auto mode.

Hold 0 to 500 m Sec

Hold is the time the 260 remains in compression after the signal has dropped below the threshold. A longer hold time is useful in smoothing out the sound when compressing several fast peaks that are fairly close together in time. In general some hold time helps to make the compression sound more natural but too much can over compress your signal making for an unwanted drop in level. The hold control is not active while in auto mode.

Release 360 dB / Sec to 5 dB / Sec

Release is how fast the 260 comes out of compression. The release is in dB per second. For example, if release is set to 5 dB /sec, and the signal is at 10dB of gain reduction, the release time is 2 seconds. Too fast a release time can result in an audible volume jump, while too slow a release time can result in the compression of signal that is not above the threshold. This can cause volume drops in your signal that may not be desired. The release control is not active while in auto mode.

LIMITER

Limiters On/Off

Turns the Limiter module on and off.

OverEasy (O) Off to 10

There are ten levels of OverEasy® that can be used for the limiters. The point when the compressor starts to compress is the "knee." When the compressor starts to reduce the level of a signal abruptly as it passes over the threshold this is called "hard knee" compression. OverEasy® (soft knee as it is sometimes called) is when the volume of the sound is compressed gradually. OverEasy® compression starts to compress before the level of the signal reaches the threshold and reaches full compression after the level has gone above the threshold. This OverEasy® compression, by its very nature sounds much smoother and more natural and will be used for most applications. When it is gentle (natural sounding or light) compression that you are looking for, the compressor offers VariKnee™. VariKnee™ gives you ten levels of OverEasy® compression to choose from (1 being almost hard knee and 10 being the most OverEasy®). This lets you choose the exact knee that is needed for the dynamic effect you are looking for.

Threshold (T) -40 to +20dBu

Threshold is the signal level at which the unit starts to compress the signal. If the level is set to -10 dBu, any signal larger than -10 dBu is compressed while any signal that has a level that is lower than -10dBu is left at the same signal level. Light compression is where only the loudest parts of the signal go over the threshold. Very heavy compression can be achieved by setting the threshold low enough that almost the entire signal content is over the threshold. For most signals, the most natural compression is achieved when most of the signal content remains just below the threshold and only the peaks cross the threshold.

Auto On/Off/

When auto is turned on the 260 will continuously set the attack / hold / release controls itself.

Attack .01 to 200 m Sec (per band or global)

This is the speed at which the 260 limiter starts to compress the signal once it has crossed the threshold. Set the attack time longer for lower frequency bands, and shorter for higher frequency bands.

Hold 0 to 500 m Sec (per band or global)

Hold is the time the limiter stays in gain reduction after the signal level has dropped below threshold. Hold is useful when you want the limiter to function for a period of time after it has been triggered. **Be careful not to set the hold time too long as it will not release in time.**

Release 360 to 5 dB / Sec (per band or global)

Just like the release time on the compressor, the limiter's release time controls how fast the limiter releases from gain reduction after the signal drops below the threshold. Set the release times longer for lower frequency bands and shorter for higher frequency bands.

Peakstop+™ On/Off and 1-6

This parameter turns the peakstop limiting on and off.

PeakStop+ involves a two-stage process of dynamic limiting. The first stage of PeakStop+ is the Instantaneous Transient Clamp™ which clamps the signal with a soft logarithmic clamp function. This logarithmic function ensures that the signal will not exceed the level set by the PeakStop+™ OVERSHOOT control by more than the overshoot amount, and that it will not introduce harsh artifacts. The second stage is a unique program limiter featuring Intelligent Predictive Limiting™. Its function is to monitor the input signal and intelligently predict the amount of gain

••

reduction needed to keep the output signal below the ceiling set by the Instantaneous Transient Clamp™. Note that since the PeakStop+™ limiter is a fail-safe limiter, it must come after the **OUTPUT GAIN** control.

Overshoot 1-6

This parameter sets the amount of overshoot for the Instantaneous Transient Clamp™.

4.10 Alignment Delay

The 260 offers alignment delay to use for compensating signal delay that occurs due to internal speaker components such as horns, speakers and subwoofers within speaker cabinets. The alignment delay is also ideal to compensate for the difference in high and low frequency speed. The parameters for the alignment delay are as follows and are user adjustable:

Delay On/Off

Turns the Speaker Alignment delay on and off.

Length

Sets the amount of Speaker Alignment delay time. Delay times include: Seconds- 0.00-2.7 seconds, Feet- 0.00-11.3 and Meters - 0.00-3.43. Fine adjustments are made in 20uS increments. Coarse adjustments are made in 190 msec increments.

Units - Seconds, Feet or Meters

Selects the unit of measurement for the delay.

4.11 Input Routing (IN)

The signal routing begins at the INPUT ROUTING block of the 260. These parameters are user adjustable on all programs.

Input 1 Level -Inf to 20dB

Adjusts the input level of input 1.

Input 2 Level -Inf to 20dB

Adjusts the input level of input 2.

Level Inf to 20dB

This parameter is used to adjust the level for the selected channel.

Master level Inf to 20dB

This parameter is used to control the overall output level of the mixed input signals.

Pink Noise On/Off

Turns the pink noise generator on and off.

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Noise Level -10 to 10 (Mixer and Router)

Adjusts the overall level of the pink noise generator.

4.12 Output

The output section 480, 481 and 482 units provide the user with the ability to control output levels of the unit and adjust phase compensation of loudspeakers within the signal path. The output level control is located in the signal path before the compressor/limiters; this means that the compressor/limiter directly affects the output level. The parameters for the Phase Compensation effect are as follows and are user adjustable. Please refer to section A.9 of the Appendix for a complete output signal routing diagram.

Shift On/Off

This parameter is used to turn the selected output phase parameters on or off. When level is off, phase is 0° and polarity is positive.

Polarity On/Off

This parameter is used to reverse the polarity of the output signal.

Phase 0 to -175°

This parameter sets the amount of phase within the selected output path. The phase is referenced to the upper frequency of the selected output crossover band.