JBL PROFESSIONAL

DSC 280

DIGITAL SYSTEM CONTROLLER

Owners Manual



Quick Start - Quick Reference

1 Check the Mains Voltage setting on the rear of the DSC 280 unit. Connect the mains to the unit and check that it powers up.

2 Connect the two audio inputs and up to eight audio outputs. Do not put any audio through the unit at this time. ***Refer to Sections 2.0 thru 2.8 'Installation'***

3 After power up, the display will show the JBL logo screen and after a few seconds the default screen for program 1, (JBL DMS-1).

4 To load another JBL file from memory press RECALL while in the default screen ; the first screen after the logo has disappeared. Use the up or down cursor key to scroll through the available programs. Press the RECALL key again to recall the selected program. If there is no program suitable then the user will need to set up the unit from scratch to suit the loudspeaker system specifications after turning the Owner Lock OFF (***Refer to Section 19.3, Owner Lock***) and recalling program 0 , or obtain a program on a PCMCIA card.

5 To load a JBL file from a PCMCIA card, the user needs to remove the top cover and look for the PCMCIA socket in the front left corner of the unit. After the card has been inserted, press RECALL while in the default screen. Press the middle soft key on the left of the display. Use the up or down cursor key to make the middle soft key show 'Cprg' (Card program). Press the top soft key ('PICK') and press the up or down cursor key to select the program from the card. A second press of RECALL will load the program. The user should now store the settings in the internal memory for future use.***Refer to Section 15.0, Store Screen.***

6 If you are not using JBL amplifiers, adjust the limiters in accordance with the amplifier used. The limiter threshold is set at: Transducer Vmax minus Amplifier Gain. Consult the amplifier's manual for the gain specification. If the amplifier goes into clipping with this setting , the user needs to lower the threshold or get a more powerful amplifier. To adjust the limiters, turn the Owner Lock OFF and ***Refer to Section 11.0, XOver Screen.***

Transducer Vmax for JBL Arrray Series and DMS-1

SUB	Output A	39dBu
LF	Output B	39dBu
HF	Output C	34dBu

Amplifier gain for JBL MPA600 = 35 dB and MPA1100 = 38 dB

Limiter Settings for JBL MPA600 and MPA1100

SUB	Output A	39dBu - 38dB = +1dBu
LF	Output B	39dBu - 38dB = +1dBu
HF	Output C	34dBu - 35dB = -1dBu

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1.0 Introduction

1.1 Digital System Controller

The DSC 280 system represents a radical step forward in DSP processing for loudspeaker control, incorporating JBL's vast experience in crossover design. It combines two channels of 4-way crossover, parametric equalization, digital delay lines and limiters, and is designed for use in all areas of sound control. A compact 2U chassis means reduced interconnections cabling and rack weight, while increasing rack space availability.

The user front-end is remarkably simple, combining a real-time graphical display with an output control section, with mute keys and led meters, for full indication of system performance. The screen shows crossover response, EQ curves plus delay and limiter data in high-resolution graphics. System settings can be stored in up to 60 user memories, for quick and easy setup, with optional password protection included.

The crossover sections can be configured as stereo 2, 3 or 4 way, with the option of setting one stereo band as a mono-lo output for sub-bass processing. Various filter types may be selected with slopes of 12, 18 or 24dB per octave.

Parametric EQ is provided as two sections of fully adjustable EQ per band of processing, one section being optionally configured as a 0-180 degree adjustable phase control, with polarity switching as standard through a separate independent function. The EQ range is 15Hz to 16kHz, gain adjustable +/- 15dB, with a Q from 0.05 to 3 octaves, switchable between bell or shelving response.

The limiters are located mid-band to minimize interaction. Each band also incorporates a delay line, with adjustable delay in unusually fine 10 microsecond steps up to 650 milliseconds and displayed and adjusted in feet, meters or milliseconds.

1.2 Other features

Data Archive to PCMCIA memory card.

MIDI Interface

2.0 Installation

2.1 Unpacking

This product is carefully checked before packing to ensure flawless appearance and operation and that it reaches you in first class condition.

After unpacking the unit, please inspect it for any physical damage. If any damage has occurred, notify your dealer immediately. A written claim for damages can then be initiated.

Please retain the shipping carton and all the packing materials for use should the unit need to be transported or returned for any reason.

2.2 Mechanical Requirements

The DSC 280 requires a vertical rack space of 2U ("3.5", 88mm). The unit should be supported at its rear by additional bracing or shelving if it is to be used in a transportable system. Failure to do so may damage the case and invalidate the warranty.

Adequate ventilation must be provided by allowing sufficient space around the sides and rear of the DSC 280 to ensure free circulation of air. Forced cooling is not required. Note that the DSC 280 has a cooling fan mounted on the right hand side of the case when viewed from the front.

2.3 Mains Power

Refer to Section 2.6 'Installation' - AC Power Fusing.

The wires in the mains lead are color coded in accordance with the following code.

WARNING! THIS APPLIANCE MUST BE EARTHED.

IMPORTANT: The wires in the mains lead are color coded in accordance with the following code.

Green and Yellow.....Earth

Blue.....Neutral

Brown.....Live

As the colors of the wires in the mains lead may not correspond with the markings identifying the terminals in your plug, proceed as follows.

The wire which is colored Green and Yellow or Green must be connected to the terminal which is marked with the letter 'E' or by the Earth signal or which is colored Green and Yellow or Green.

The wire which is colored Blue must be connected to the terminal labelled 'N' or colored Black or Blue.

The wire which is colored Brown must be connected to the terminal labelled 'L' or colored Red or Brown.

Those units supplied to the North American market will have an integral moulded 3 pin connector which is provided to satisfy required local standards.

2.4 Voltage Setting

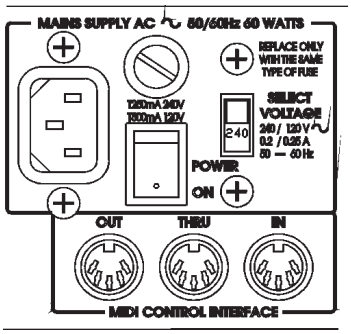
The mains voltage selector switch provides a simple external adjustment to allow operation on all international AC power standards. The allowable ranges for the supply voltage are:

99VAC up to 121VAC on the 120V position and

204VAC up to 264VAC on the 240V position.

An additional internal tap change is available for 100V working. ***Refer to Appendix A.2.*** The tap change gives:

90VAC up to 110VAC on the 120V position



Outside these ranges the unit will not work satisfactorily, if at all. Voltages in excess of the maximum will probably cause damage. Voltages below the minimum will cause the power supplies to drop out of regulation, degrading the performance of the system. The battery in the unit will preserve all data in the event of a power failure.

2.5 Safety Earthing

The Green and Yellow wire of the mains cord must always be connected to an installation Safety Earth or Ground. The Earth is essential for personal safety as well as the correct operation of the system, and is internally connected to all exposed metal surfaces. Any rack framework into which this unit may be mounted is assumed to be connected to the same grounding circuit.

2.6 AC Power Fusing

The incoming mains power is fused within the DSC 280 by the fuse holder mounted on the rear panel. Should it be necessary, the fuse must be replaced by one of the same size and current rating.

20mm T250mA for the 240V setting

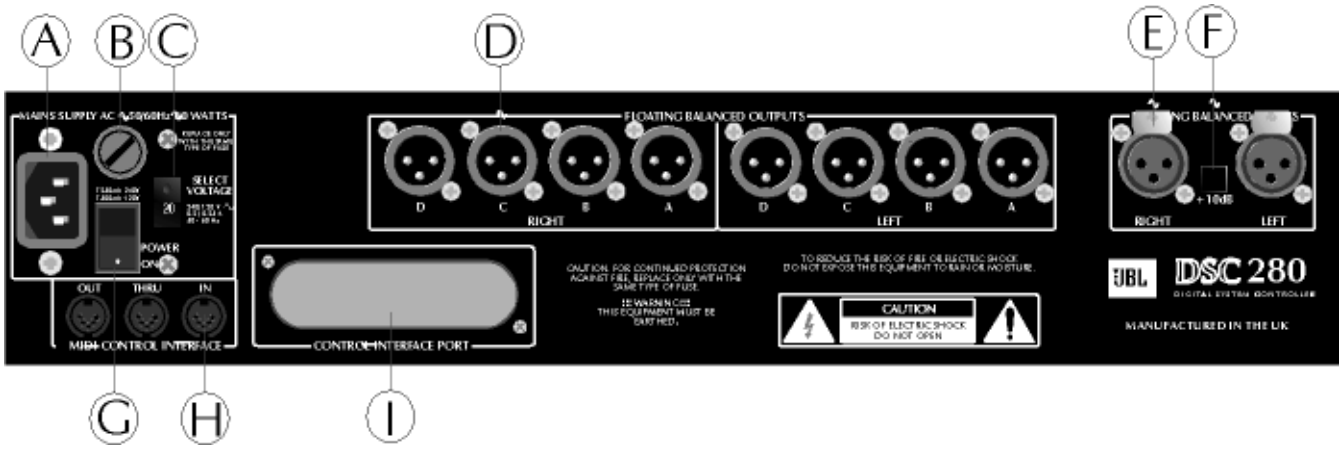
20mm T500mA for the 120V setting

It is most important for continued safety that this specification is strictly adhered to. Spare fuses of the correct rating are supplied with the unit.

It is unlikely that the AC fuse will fail during normal use and caution should be exercised if it does. The most likely reason at first power up is the incorrect setting of the mains voltage switch on the rear panel. Alternatively the unit may have been connected across two lines of a three phase supply. In both of these cases the internal transient suppressors may have been damaged and will continue to blow replacement fuses, even if the supply is now correct. The suppressors will have protected the DSC 280 Controller from damage and need replacing before the unit can be used again.

Refer to Appendix A.1 for the replacement procedure.

2.7 Rear Panel



A Mains power input

B Fuse

C Power voltage selector

D 8 Band outputs

The DSC 280 audio outputs are electronically balanced and floating. Transformer balancing is available as a retrofit option.

Pin 1	Shield/Ground
Pin2	Signal Hot (+)
Pin3	SignalCold (-)

E 2 Channel inputs

The DSC 280 audio inputs are electronically balanced. Transformer balancing is available as a retrofit option.

Pin 1	Open circuit
Pin2	Signal Hot (+)
Pin3	SignalCold (-)

F +10dB switch

With this switch in, 10dB of gain is added to the input signal. An led on the front panel indicates when this switch is on.

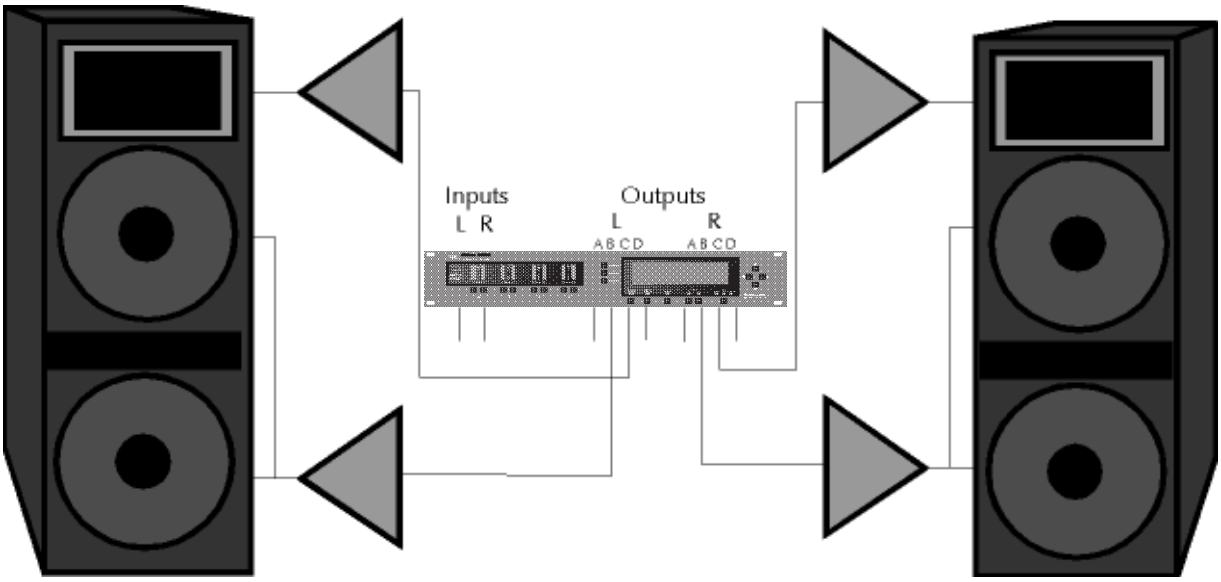
G Mains power switch

H Midi interface connectors

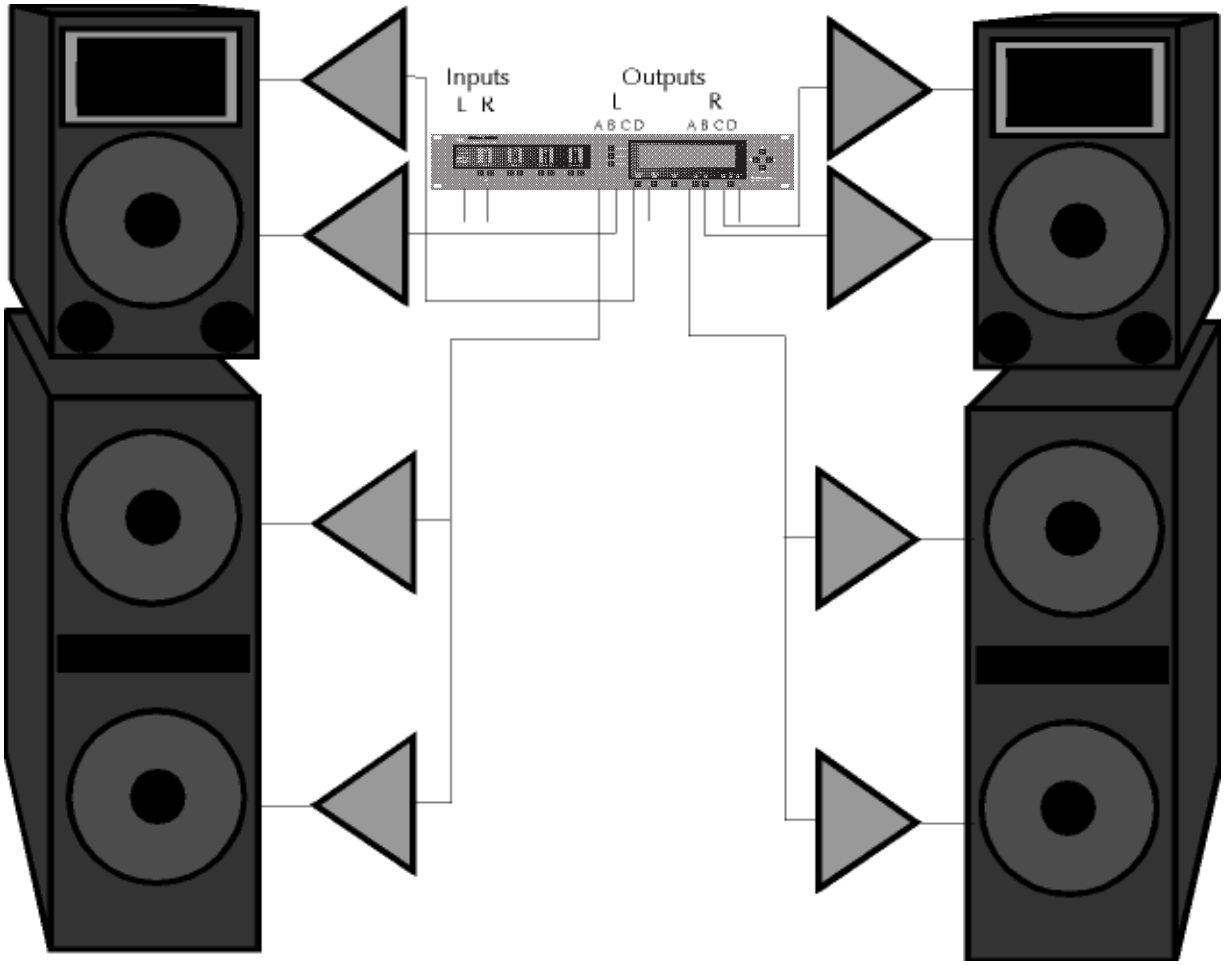
I Option panel

For future interface options.

2.8 Setup

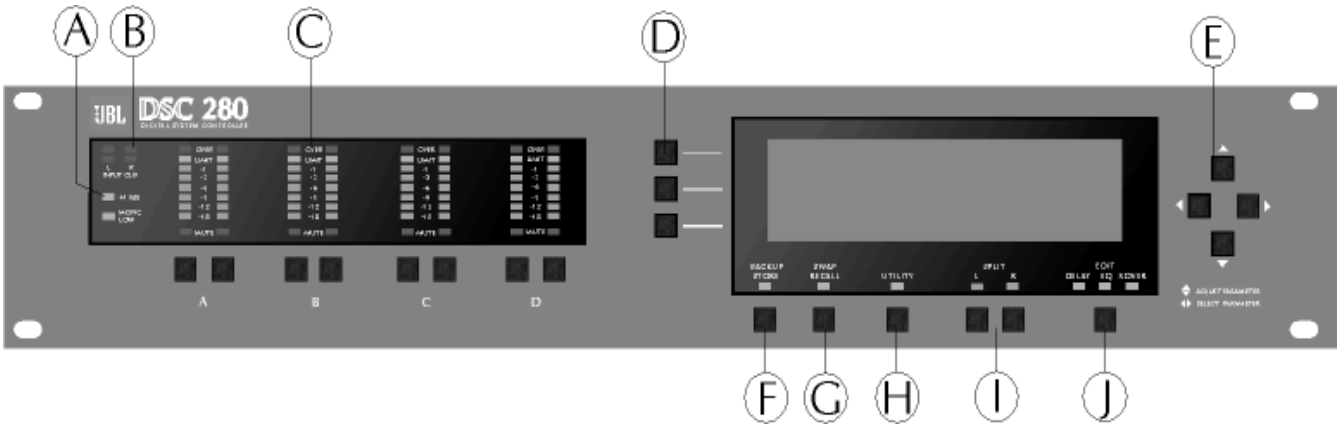


2 WAY SYSTEM WITH JBL 4894 ARRAY SERIES



3 WAY SYSTEM WITH JBL 4892+4893 ARRAY SERIES

3.0 Controls



A +10dB indicator

This led is lit when the rear panel +10dB switch is on.

Refer to Section 4.0 Getting Around and Section 2.7, Rear Panel.

B Clip indicators

The upper pair of clip leds are driven from the input circuitry and indicates input overload. The lower pair of clip leds indicates overload at one of several points through the dsp circuitry. Overload in the dsp section is most often caused by large eq filter boosts.

C Output section

The output meters are referenced to the band limit threshold. If, for example, the limiter threshold is set to +4dBu then the -3dB led will come on at +1dBu. The Limit led is lit when the signal reaches the limit threshold. The Over led lights at 6dB above the limit threshold when the limiter is on and is left on permanently when the limiter is switched off as a warning.

Refer to Section 11.0, XOver Screen - Limit.

Pressing a mute key will toggle the associated band output on and off. The mute led is illuminated when the associated output is muted. Mute status is saved when a program is stored.



D Soft Keys

Many of the editing screens have one or more soft key labels down the left hand side of the display . Each corresponds to one of the three soft keys. The soft keys are most often used to select a type of parameter.

Refer to Section 4.0 Getting Around

E Cursor keys

Pushing the left or right cursor key steps around the current type of variables allowing the user to select one to adjust. Pressing the up or down cursor key will adjust the currently selected variable.

F Store (Backup) Key

Refer to Section 4.0 Getting Around and Section 15.0 Store Screen.

G Recall (Swap) Key

Refer to 4.0 Getting Around and Section 16.0 Recall Screen

H Utility Key

The Utility Key takes the user in and out of each edit screen's utility area. The led is lit when in a utility screen.

Refer to Section 4.0 Getting Around

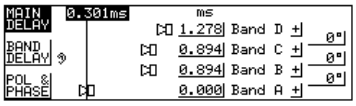
I Left/Right/Split Keys

These keys control which channel or channels the user is adjusting and which channel is viewed. The leds serve to indicate whether the left and right channels are set with the same values.

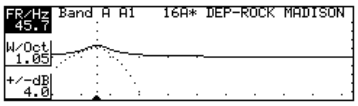
Refer to Section 4.0 Getting Around

J Edit Key

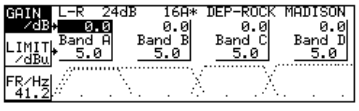
This key determines which of the three editing screens the user is in. The three screens are:



Delay For setting band delays, phase adjustments and polarities.

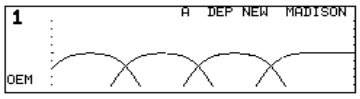


EQ For setting equalization for each band



XOver For adjusting band crossover frequencies and slopes and for setting band gains and limiter thresholds.

Each screen has an associated orange led which is on while the user is in the screen or a related utility screen.



A fourth press of the Edit Key takes the user back to the Default screen.

NOTE Pressing and holding the Edit Key in any screen will take the user straight back to the Default screen.

Refer to Section 4.0 Getting Around

4.0 Getting Around the DSC 280

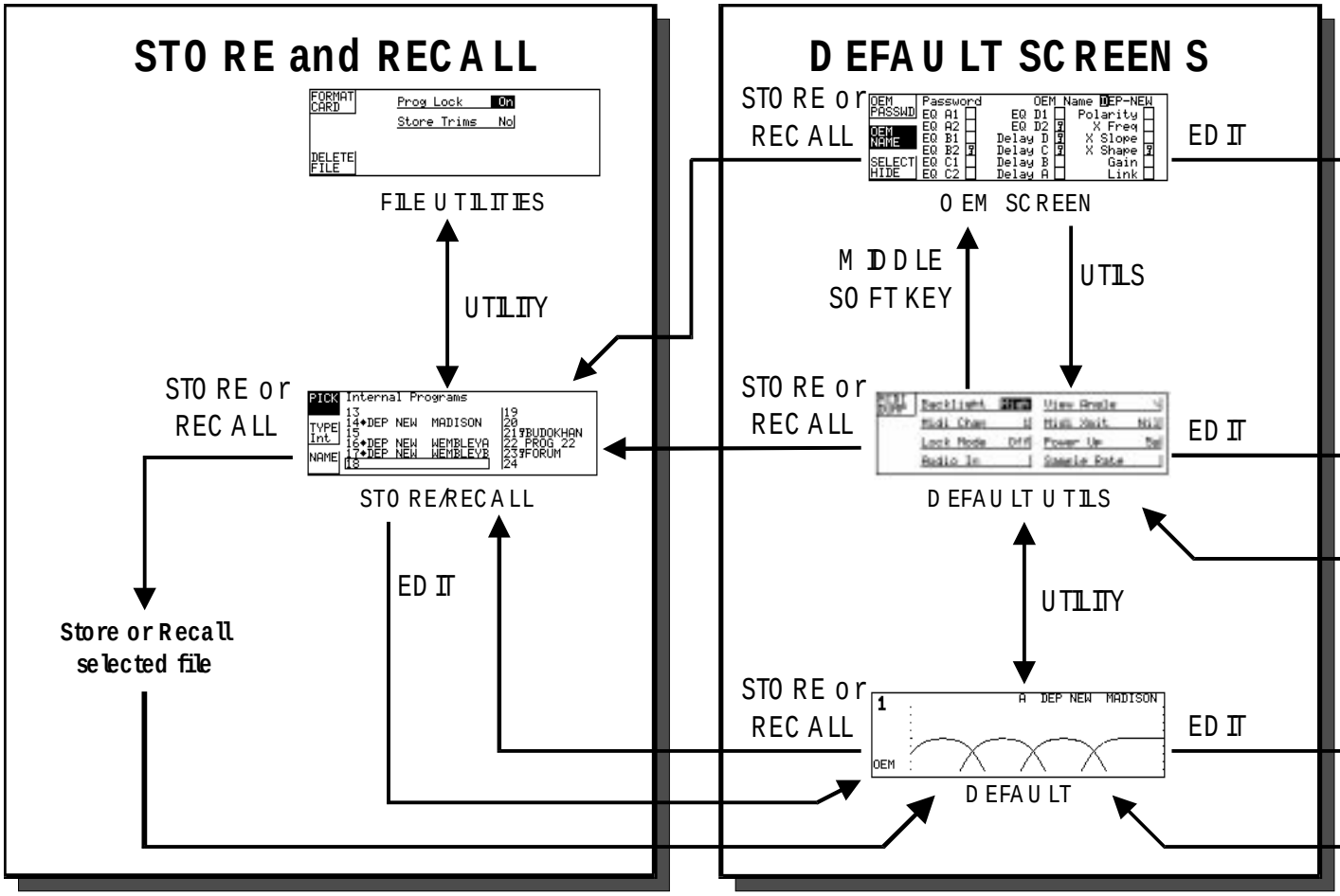


Fig 4.0 DSC 280 Key Map

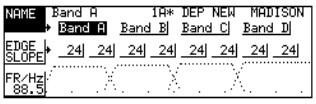
4.1 Moving Around the Screens

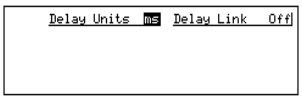
Quick Reference

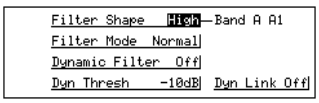
Pressing the EDIT key shifts the screen through each of the main editing areas in turn and then back to the main 'Default' screen.

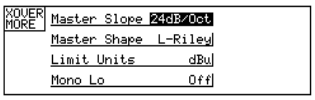
Pressing and holding the EDIT key will take the user back to the main 'Default' screen from any edit screen.

Pressing the UTILITY key shifts in and out of each edit screen's utility page.

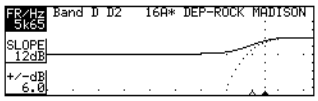


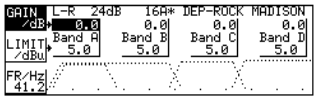












The Soft keys have different operations depending on the current screen. Two lines of text for each key on the left hand side of the screen label the key's function.

Press the up or down cursor key to adjust the currently selected variable.

Press the left or right cursor key to move between the available variables.

4.2 Key's Operation

Split, Left and Right Keys

The Split keys (Left and Right) are used to select which of the two channels in the DSC 280 is being displayed and whether the user wishes to control one or both of the channels simultaneously.

Linked Operation

The two leds indicate whether the DSC 280 channels are linked and controlled together or split and controlled individually. If both split leds are on continuously then the two channels have identical parameter values throughout and are linked together when any parameter is adjusted. If one led is flashing then the parameter values for left and right are different. The led that is NOT flashing is the one which is being controlled and displayed on the screen. The user can switch between the channels to see the parameter values for left and right while linked but both parameters are adjusted when the up or down cursor key is pressed.

If only one led is on then only one channel can be adjusted and displayed at a time. This could be used, for example, for making fine adjustments to one side of a stereo pair. The led that is on indicates the controlled and displayed channel. The user can select between the two channels by pressing the individual L and R keys. Once the user has pressed the two Split keys to return to linked operation, one of the leds will flash to show that the two channels now have different parameter values.

There are several important points to note about the Split mode operation.

Split Operation

1 The DSC 280 was designed primarily as a stereo unit. All programs and card files are stored as Left and Right pairs and it is not intended for the user to be able to store the two channels independently. The user can program the two channels for quite different purposes (e.g. Left front of house and left delay tower in one DSC 280) but he or she should be aware that the complete setup will be stored in a single stereo program.

2 The left and right split leds will not flash if the left and right mutes are set differently.

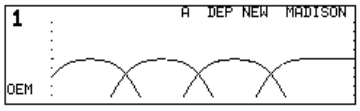
3 Parameter value can be set to different values while in split operation and will hold those different values when the unit returns to linked operation. When the parameter is now adjusted in linked mode the left and right parameters behave in one of two ways depending on what type of parameter is being controlled.

Variable parameters such as a filter frequency or a gain value will move with the offset between the left and right values preserved. If either value, left or right, hits the limit of the parameter's travel then the parameter cannot be moved further. The offset is preserved.

Switched parameters such as the Bell/Shelving switch in the EQ Utility section will jump to the same displayed value when the parameter is adjusted.



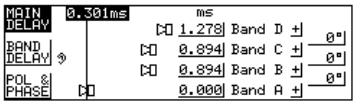
After powering up, the DSC 280 performs internal checks and sets up the audio path before releasing the output mute relays. The time before the mute relays open can be set in the Default Utility screen.***Refer to Section 6.0, Default Utility Screen.***



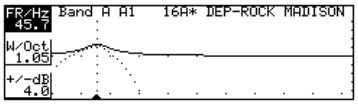
The screen that the DSC 280 now shows is called the Default screen. This shows the overall frequency response of the four output bands and the current program information. The Default screen is covered in more detail in***Section 5.0, Default Screen***.

The Edit Key

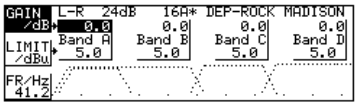
The EDIT key steps through the three main parameter editing screens.***See Fig 4.0, DSC 280 Key Map.***



DELAY, where the user adjusts band delays and the overall delay for the unit, the polarity of each band and the phase adjustment at each crossover point.***Refer to Section 7.0, Delay Screen.***



EQ, where the user can setup the two equalizers available in each output band. ***Refer to Section 9.0, EQ Screen.***

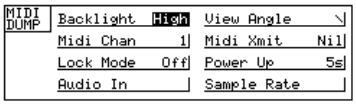


XOVER, where the user can adjust the crossover frequencies of the channel and the internal gain and limiter thresholds for each band.***Refer to Section 11.0, Xover Screen.***

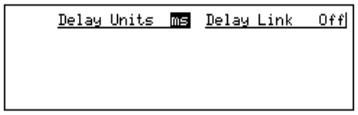
The orange leds above the EDIT key always show which of the three edit areas the user is in.

The Utility Key

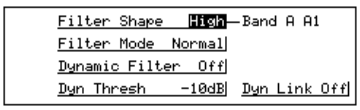
The UTILITY key takes the user into the related utility screen for each of the three edit screens, the default screen and the Store/Recall screen. Each utility menu has a number of setup and control parameters which are associated with their edit screen. Pressing EDIT while in a utility screen will take the user to the next utility screen in the loop (Default to Delay to EQ to Xover and back to Default).***See Fig 4.0, DSC 280 Key Map.***



The Default Utility has entries for midi setup, contrast and brightness, input and sample rate selection, power up time and the unit lockout selector.***Refer to Section 6.0, Default Utility Screen.***



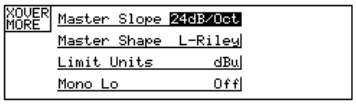
The Delay Utility has entries for units for the delay values and a facility to link two or more band delays together.***Refer to Section 8.0, Delay Utility Screen.***



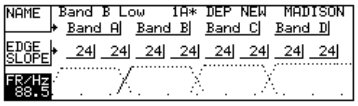
The EQ Utility Screen has entries to set whether each filter is bell or shelf and to set the parameters for the dynamic equalizer.***Refer to Section 10.0, EQ Utility Screen.***

The Soft Keys and Cursor Keys

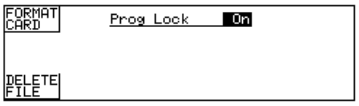
Store and Recall



The Xover Utility Screen sets the master slope (in dB per octave) and the shape (Linkwitz-Riley, Butterworth or Bessel) for all crossover edges. Mono low on and off, and the units for the limiter values are also set here. Pressing the Top Soft key in the Xover Utility screen takes the user to the Xover More screen. ***Refer to Section 12.0, Xover Utility Screen.***



The Xover More Screen allows the user to adjust individual crossover edge frequencies and slopes and also to select a name for each of the four bands from a preset list of names. ***Refer to Section 13.0, Xover More Screen.***



Pressing Utility while in the Store or Recall screens takes the user to the File Utility Screen where files can be deleted, the PCMCIA card can be formatted and individual programs can be locked against accidentally being overwritten. ***Refer to Section 14.0, Store and Recall, and Section 17.0, File Utility Screen.***

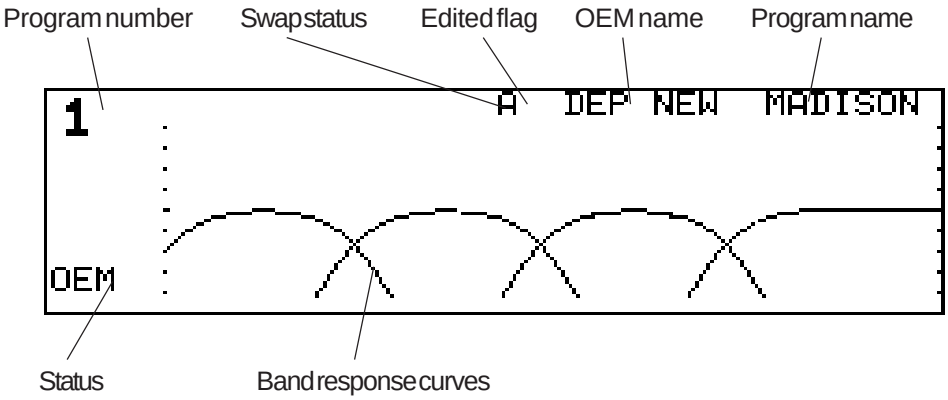
The Soft Keys and Cursor keys

The soft keys and cursor keys allow the user to select the variable to adjust. The soft keys generally select a type of variable to adjust. For example in the Delay screen, pressing the middle soft key moves the highlight to one of the band delay values. Pressing the left or right cursor key now moves the highlight around the four band delays. Pressing the up or down cursor key will adjust the currently highlighted variable.

Store and Recall

As the Store and Recall screens are similar they are treated together with key arrows called STORE or RECALL in ***fig 4.0, DSC 280 Key Map.***. Also, note that the STORE and RECALL keys have different operations depending on whether the user is in one of the Edit screens or in the Default screen. In the Default screen the STORE or RECALL keys will store or recall programs to the internal memory or the PCMCIA card. When they are pressed in one of the edit screens, they serve to transfer the current program to and from a Backup or 'scratchpad' program allowing A-B comparisons when making changes. ***Refer to Section 14.0 Store and Recall.***

5.0 Default Screen



Quick Reference

1 Press the EDIT key to enter the edit screens.

2 Press STORE or RECALL for the file handling screens.

When the DSC 280 is powered up the Default screen is shown. The Default gives a basic representation of the current state of the unit. If the unit has Owner Lock On, the Default screen will be replaced by the current start up logo along with the current program name and number.

The main area of the screen contains the four output band curves . Each band curve represents the frequency response of the high pass and low pass crossover rolloffs in addition to any equalization filters that have been used (and that are not hidden).

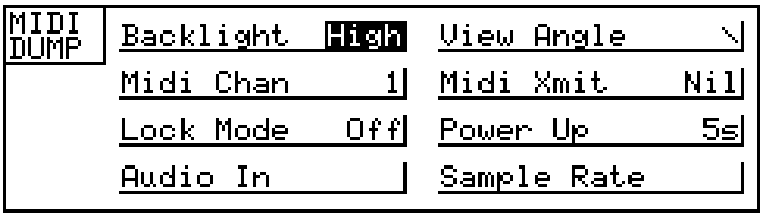
The rolloff frequencies are adjusted in the XOver Screens, ***refer to Section 11.0, XOver Screen and Section 13.0, XOver More Screen***.

The equalization is adjusted in the EQ Screen, ***refer to Section 9.0, EQ Screen***.

The current program number is shown in the top left corner of the screen. The program number is displayed with double size digits until the values have been edited and so differ from the last recalled or stored program. Once edited, the program number is displayed with normal size text. An edited program is also indicated with an asterisk in the centre of the top row. The letter (A or B) denotes which backup/swap memory is being used.

To the right of the top row are the user name and the OEM name. The user name is that used when the program was last stored. The OEM name is preset by the designer of the DSC 280 data for the system in use.

6.0 Default Utility Screen



Quick Reference

1 Press the left and right cursor key to move between utilities.

2 Press the up and down cursor key to adjust the value.

Backlight **Dim,Low,Mid,High**
This utility adjusts the brightness of the screen backlight

View angle
This utility adjusts the viewing angle of the lcd display.

Midi Chan **1 to 16**
This sets the Midi channel to which the unit sends and responds.

Midi XMit **Nil, Met, Prog, Thru**
This sets which data is output from the DSC 280 Midi out socket - the Midi thru socket is hard-wired to the Midi input as normal practice.

Nil	No data is output.
Prog	Program change messages are output on the current Midi channel.
Thru	Thru outputs all input data mixed with any dump data requested by an external controller. This mode is intended for use in a loop of units controlled by a master Midi controller.

Lock Mode **OEM, Off, On, Owner**

OFF	With Lock Mode off, all values can be adjusted unless they have been locked by the OEM system designer. ***See OEM below and Section 19.0, System Security.***
ON	With Lock Mode on, only the mutes are available to adjust. The user can step through the edit screens but not change anything except the display angle and brightness. Left and right channels cannot be unlinked or linked but the user can look at each channel in turn.
OEM	When Lock Mode is set to OEM, the unit will prompt for a four letter password which must match the password set by the OEM system designer. If the password is entered correctly, the middle soft key will allow the user to enter the OEM Hide Screen.

If the password is incorrect, the Lock Mode returns to off. If the user wishes to create a new program and lock areas using OEM hide then they should begin by recalling the default program (program 0) or another program which is not OEM locked. All OEM programs are denoted on the Recall Screen with a diamond next to their name. Programs which have not been used as OEM programs before (e.g. after recalling the default program) can be set to OEM by entering the password '**JBL**' when prompted.***Refer to Section 19.0, System Security.***

OWNER — OWNER mode allows the owner of the unit to program a system and then lock the unit against being reset. With Owner lock ON, files cannot be deleted, the default program cannot be recalled, limiters cannot be adjusted and the Default screen displays the current logo. To enter Owner mode, press the down cursor key. To change Owner mode, the user must enter the current password.**In a new unit the password is 'DSC'.** If turning Owner mode ON, the user can enter a new password once the old password has been accepted. **There is no way to turn Owner mode off if the password has been forgotten!***Refer to Section 19.0, System Security.*

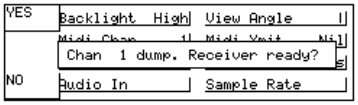
Power Up — **Mute, 5s to 60s**
This utility allows the user to adjust the time between powering up the unit and the outputs being returned to the mute status that was set prior to the unit last being switched off. If the value is set to Mute, the unit will always stay in mute after powering up.

Audio In — **Anlg, AES**
When an AES/EBU input/output board is fitted, this option selects between analog input or AES/EBU input. Please refer to the seperate information supplied with the AES/EBU option boards.

Sample Rate — **44.1, 48**
When an AES/EBU output board is fitted, this option selects the sampling frequency to be either 48kHz or 44.1kHz. Please refer to the separate information supplied with the AES/EBU option boards.

Top Soft Key

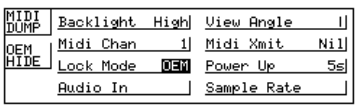
MIDI Dump



MIDI Dump is intended for use in transferring ***all*** the data from one DSC 280 to another. The sending DSC 280 should be connected to the receiving DSC 280 with a midi cable. Press the Top Soft Key to initiate the transfer. The ***receiving*** DSC 280 will display the question "Receive dump and overwrite all?" Select YES on the receiving unit first. The sending DSC 280 will display the question 'Chan n dump. Receiver ready?" where n is the current midi channel. Select YES on the sending unit to start the dump.

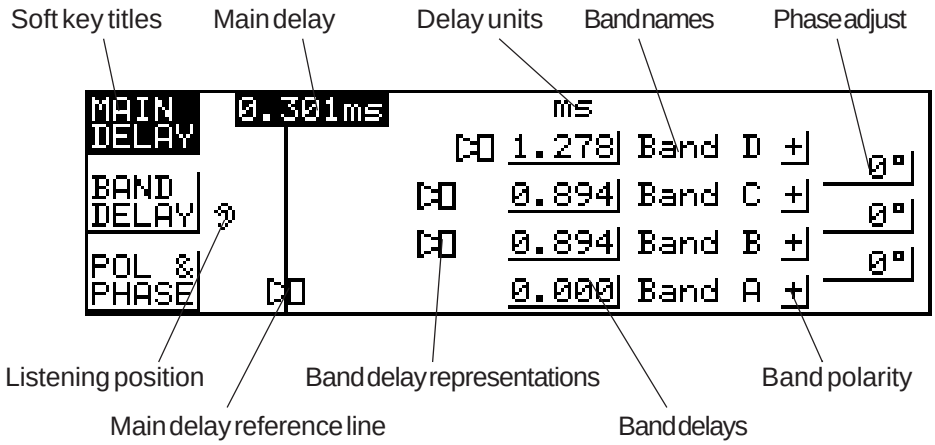
Middle Soft Key

OEM Hide



OEM Hide is only visible once a password has been entered after setting Lock Mode to OEM. The OEM Hide screen allows system designers to lock details of a system setup against being adjusted or viewed by unauthorized users.***Refer to Section 19.0, System Security.***

7.0 Delay Screen



Quick Reference

1 To adjust the overall delay for all four bands press the top soft key and press the up or down cursor key.

2 To adjust the delay for an individual band press the middle soft key, press the left or right cursor key to select a band and press the up or down cursor key to adjust the delay.

3 To adjust a phase or polarity value press the bottom soft key, press the left or right cursor key to select a value to adjust and press the up or down cursor key to adjust.

The delay screen gives the user access to the various parameters used for time and phase aligning the four output bands. The delays of the four bands can be adjusted in one of three ways.

1 Individually - as would be used for time aligning single speakers within a cabinet.

2 In groups - for example, three output bands used to drive three speakers within a single cabinet.

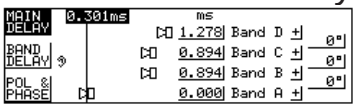
3 All four bands delayed together - as for a delay tower.

The ear to the left of the screen represents the listener, the line a little to the right of the ear represents the overall delay of the unit. This line does not, however, move as the overall delay changes, it is there purely to show the individual band delays more clearly. If an individual band delay is set to zero that band's speaker icon will be positioned on the reference line. As the band's delay is increased, the icon will move away from the reference line and shift toward the right - representing an increased 'distance' from the listener's ear. No scaling is intended between the pixels on the screen and the delays represented; the speaker icons will automatically scale their positions to show the relative delays between bands as clearly as possible.

The band names to the right of the band delay values are for reference only. The names can be changed by the user in the 'Crossover More' screen. ***Refer to Section 13.0 XOver More Screen.***

Top Soft Key

Main Delay

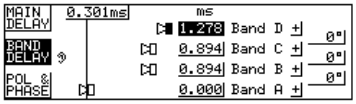


Selecting the top soft key allows the user to adjust the overall delay of all four outputs. Alongside the Main Delay value are the units used to display both the Main and Band Delay values. The units can be changed in the Delay Utility screen.

Refer to Section 8.0, Delay Utility Screen - Delay Units.

Middle Soft Key

Band Delay

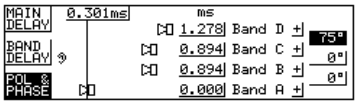


Selecting the middle soft key allows the user to adjust a single band delay. Use the left or right cursor key to step between the band delays, then press the up or down cursor key to adjust the band delay.

Delays can be grouped together using the Delay Link utility in the Delay Utility screen. ***Refer to Section 8.0 Delay Utility Screen - Delay Link***. This allows the user to link band delays that are used in a single cabinet. For example, if the Delay Link is set up as ABC then the lower three delays will change together, preserving any offsets previously set between the three delay values. If any member of the link is selected then the speaker icons for ALL the members of the group will be shown highlighted. If any of the delays reaches zero or the maximum delay allowable (approximately 635milliseconds) then the three delay values will not adjust any further in that direction.

Bottom Soft Key

Pol & Phase



Selecting the bottom soft key allows the user to adjust the Polarity for each band and the Phase adjustment at each crossover point if a filter has been assigned to Phase for that band.

Polarity is selectable as either non-inverting '+' or inverting '–' and can be applied individually to each band.

Phase, if selected, is adjustable from zero to 180°. The phase angle selected is applied to the lower band of each crossover pair and is the phase adjustment applied to the lower band output at the crossover frequency. Phase is turned on and off in the EQ Utils screen and uses one of the two filters available for each band. ***Refer to section 10.0 EQ Utility Screen, Filter Mode***.

8.0 Delay Utility Screen



Quick Reference

1 Press the left and right cursor key to move between utilities.

2 Press the up and down cursor key to adjust the value.

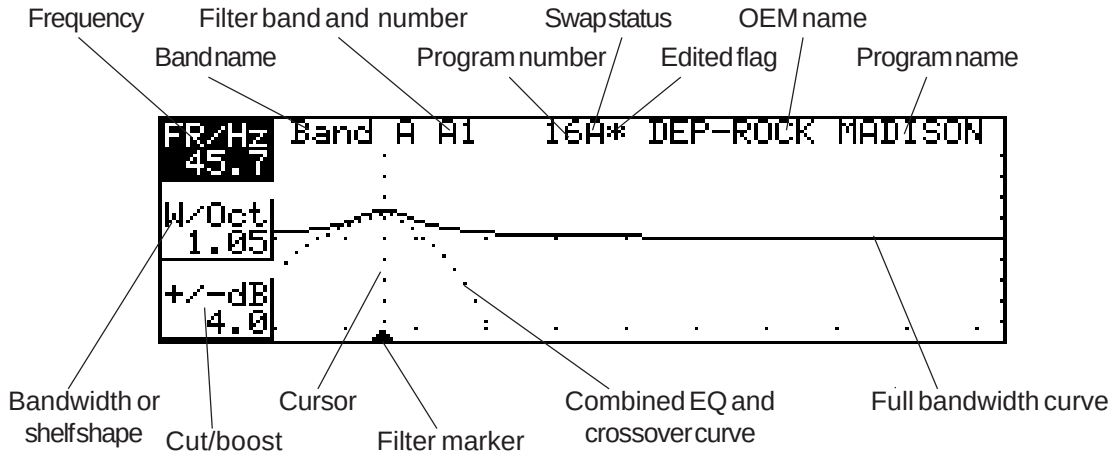
Delay Units **ms, ft, m**

This selects the units used for displaying and adjusting both main and band delays on the Delay Screen. 'ms' represents milliseconds, 'ft' represents feet (and, for short delays, feet and inches) and 'm' represents meters. Note that for longer delays, the resolution of the up or down cursor key is reduced to match the number of decimal places displayed. Short delays will adjust in approximately 10us increments while longer delays will adjust in 100us increments.

Delay Link **AB, BC, CD, ABC, BCD, AB-CD**

Delay Link allows the user to link delay values to create 'cabinets' of related delays; for example, if three output bands are used in a single speaker pack. First adjust the internal delays within the group of bands to align the speakers within the pack while Delay Link is set to OFF. Then move back to Delay Link and set it to ABC or BCD depending on the block of channels to link. Adjusting any of the three delays in the pack will now change all three, preserving the time alignment within the pack. Note that only adjacent bands can be linked and that the setting 'AB-CD' allows the top and bottom bands to be linked as two independent pairs. If you want to link all four bands together just use the main delay!

9.0 EQ Screen



Quick Reference

1 Press the left or right cursor key to select a filter to adjust.

2 Press the top soft key and press the up or down cursor key to adjust the filter frequency.

3 Press the middle soft key and press the up or down cursor key to adjust the filter bandwidth.

4 Press the bottom soft key and press the up or down cursor key to adjust the filter cut or boost.

Each band of the DSC 280 has up to two parametric filters. Each filter is adjustable for frequency, width and cut/boost. In addition, one filter per channel (Filter 1) can be made to be dynamically adjustable - changing its cut/boost value as the signal level changes. The other (Filter 2) is switchable between EQ or phase angle adjustment using the utility on the EQ Utility Screen. In addition to the 'bell' filters, each filter can be selected to be either high shelving or low shelving with cut or boost available at either end and adjustable slope of 6dB or 12dB per octave.

At the top left of the screen are the name of the current band and the bandletter and filter number of the current filter. The filter is referred to in the form A1 or C2 etc. where A or C is the band letter and 1 or 2 indicates which of the band's filters are currently selected. If one of the filters is selected to be used for phase adjustment then only filter 1 is available for equalization. Similarly, to avoid conflict with the phase function, only filter 1 in one of the band's can be selected to be a dynamic filter. ***Refer to Section 10.0, Eq Utility Screen- Filter Mode & Dynamic Filter.***

In the center of the top row is the current program number, a letter denoting which backup/swap memory is being used and an asterisk to indicate when the current program has been edited. To the right are the OEM name and the current program name.

EQ Screen

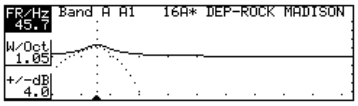
At the bottom of the screen the small arrowheads indicate the filter frequencies in the current band. A solid arrowhead and a dotted vertical cursor are used to represent the current filter.

Two curves are displayed on the Eq screen. The solid line represents the resultant response of the filters in the currently selected band as if the band were full bandwidth from 15Hz to 20kHz. The dotted line is the actual frequency response of the current band with the crossover rolloffs added to the filter curves. This allows the user to see equalization curves even when they have no effect in the current output.

Press the left or right cursor key to move through the filters (A1, A2, B1, B2, C1, C2, D1, D2). If any filters have been taken for phase adjustment or have been hidden by the OEM system designer then they will be missed out. If no filters are available, it is not possible to enter the EQ Screen.

Top Soft Key

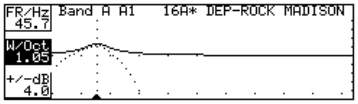
FR/Hz



Pressing the top Soft key and the up or down cursor key adjusts the center frequency of the currently selected filter. The value in the soft key box is the filter frequency in Hertz; the center frequency for bell curves, the 3dB point for shelving curves.

Middle Soft Key

W/Oct (Slope)

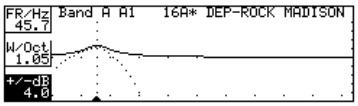


Pressing the Middle Soft key and the up or down cursor key adjusts the band width of the currently selected filter. The value in the soft key box is the width of the filter in octaves. The width of each filter is adjustable from 0.05octaves up to 3 octaves. If the filter is set to shelving, this box allows the user to select either 6dB per octave or 12dB per octave filter slopes.

Refer to section 10.0, Eq Utility Screen - Filter Shape

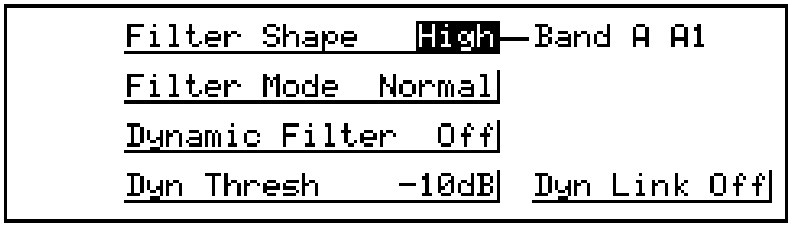
Bottom Soft Key

+/–dB



Pressing the Bottom Soft key and the up or down cursor key adjusts the cut or boost value of the current filter. The value in the soft key box is the cut or boost value in dBs. A maximum of ±15dB is available in each filter.

10.0 EQ Utility Screen



Filter Shape **Low, Bell, High**
Each of the available filters in each band can be selected to be low shelving, bell or high shelving. This selection always applies to the currently selected filter in the Eq Screen. The current band name and the band letter and filter number are shown next to this variable for reference.

Filter Mode **Norm, Phase**
Filter Mode selects whether or not the user wishes to use one filter per band for phase correction. With this value set to Normal, two filters are available for equalization in each band. With it set to Phase, one is stolen and used in the Delay Screen to adjust the phase correction at each crossover point. ***Refer to section 7.0, Delay Screen.*** Note that it is always filter 2 in each band that is taken for phase adjustment. Each band is adjustable individually and it is the current band's value of Phase/Normal that is adjusted here.

Dynamic Filter **Off, A1, B1, C1, D1**
This selection is used to select one filter per side to act dynamically; its cut or boost are adjusted as the signal level in the band changes. ***Refer to Dynamic Filter on the next page.***

Dyn Thresh **Adjustable -20dB to -2dB**
The value determines the threshold below which the dynamic filter operates. The value is in dB relative to the band limiter threshold. ***Refer to Dynamic Filter on the next page***.

Dyn Link **On, Off**
With Dynamic Link on, the control signals for the left and right dynamic filters are combined to prevent differences between them causing stereo shifting effects. With this value off, the two sides work independently. ***Refer to Dynamic Filter on the next page.***

10.1 Dynamic Filter.

The dynamic filter works in one of two distinct ways depending on whether the filter selected is in boost or cut mode.

In boost As an increasing signal level approaches the dynamic threshold, the boost value of the filter is progressively *reduced* until the filter is flat when the signal level reaches the dynamic threshold.

In cut As an increasing signal level approaches the dynamic threshold, the cut value of the filter is progressively *increased from flat* until the filter is at its full cut value when the signal level reaches the dynamic threshold.

Both functions serve to reduce the filter level as the overall signal level in the band increases.

The threshold for the dynamic filter is set relative to the band limiter. The ratio of the filter cut/boost adjustment is preset to 2:1. The first graph below (fig 10.1) shows the relationship between the signal level and the filter level with a boost filter. The example shown has the dynamic threshold set to -10dB below the limiter threshold and a filter boost of 6dB. As the signal level is increased from low levels the filter boost is constant at 6dB until 22dB below the limiter threshold. With each 2dB increase in signal level the filter boost is decreased by 1dB until the signal level reaches the threshold at which point the filter is effectively flat. As the signal level continues higher, the filter boost remains at 0dB.

The second graph (fig 10.2) shows a cut filter, again with a 6dB cut and a -10dB threshold. As the signal is increased from low levels the filter now stays flat until 22dB below the limiter threshold. With each 2dB increase in signal level the filter cut is increased by 1dB until the signal level reaches the threshold at which point the filter is at 6dB of cut. Increasing the channel level further holds the filter at 6dB of cut.

Fig 10.1 Dynamic EQ with a Boost Filter

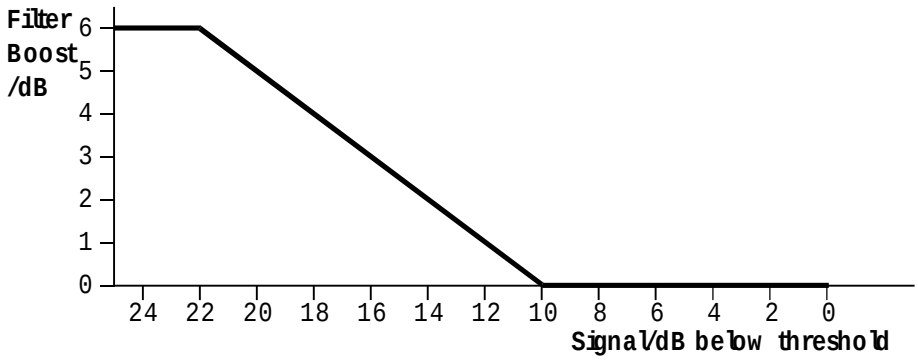
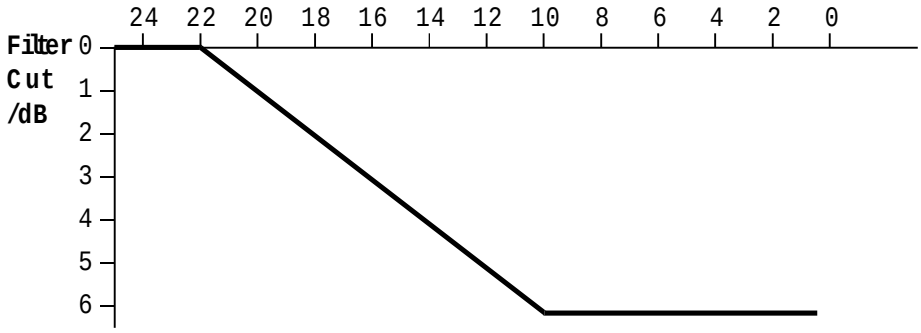
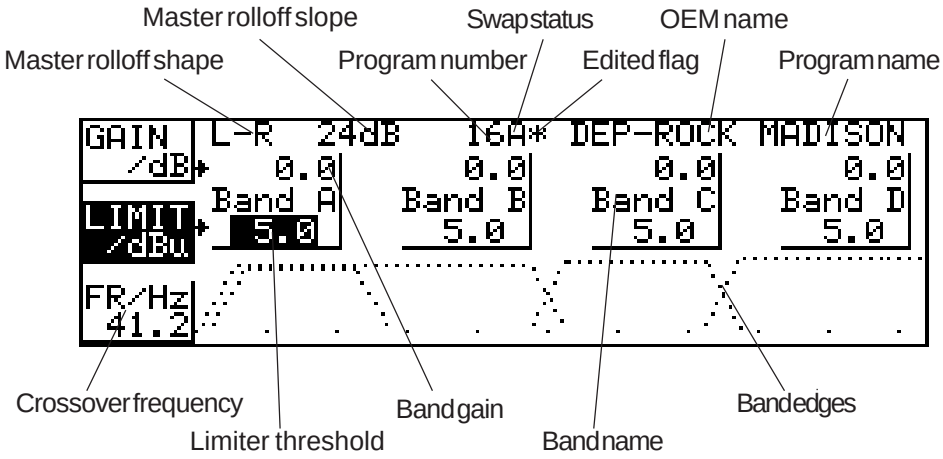


Fig 10.2 Dynamic EQ with a Cut Filter



11.0 XOver Screen



Quick Reference

1 To adjust a band gain value, press the top soft key, press the left or right cursor key to select a band and press the up or down cursor key to adjust gain.

2 To adjust the limiter threshold for an individual band press the middle soft key, press the left or right cursor key to select a band and press the up or down cursor key to adjust the threshold.

3 To adjust a crossover frequency, press the bottom soft key, press the left or right cursor key to select a crossover point to adjust and press the up or down cursor key to move it.

The XOver (Crossover) Screen gives the user access to the top level of crossover frequency adjustment in addition to control of the band gain and limiters.

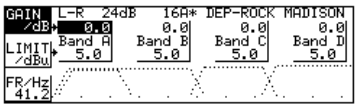
The left hand end of the top line of the screen gives the master band edge roll-off in dB per octave and the edge shape; whether it is Linkwitz-Riley (L-R), Butterworth (But), or Bessel (Bes). The center of the top line contains the current program number, a letter denoting which backup/swap memory is being used and an asterisk indicating when the program has been edited. To the right of the top line are the current program OEM name and user name.

The band names in the horizontal line between the gain and limiter threshold values are for identification only and can be adjusted in the XOver More Screen, ***refer to Section 13.0, XOver More Screen - Name.***

XOver Screen

Top Soft Key

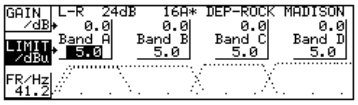
Gain/dB



These gain values are intended to be used for system set up. The XOver screen gain adjustments give an overall control of ±15dB relative to the channel input. Note that limiter thresholds refer to levels at the outputs and are not affected by the gain settings.

Middle Soft Key

Limit/dBu (or mV)



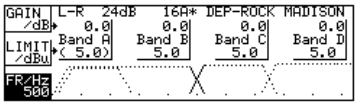
The DSC 280 limiters have an infinite compression slope above the user preset threshold value with attack times automatically linked to the lower band edge frequencies of their related band. The units for the threshold display are set in the XOver Utility Screen and are selectable dBu or mV. ***Refer to Section 12.0, XOver Utility Screen - Limit Units.***

Note that the output level meters display a value relative to the band limiter threshold. dB values on the meters are dB below threshold, the 0dB led being at the onset of limiting.

Pressing the left or right cursor key will first step through the limiter values and then through the limiter on/off flags. Each on/off is represented by brackets around the limiter value. When the brackets are NOT visible, the limiter is ON for that band. When the brackets are visible, the limiter is OFF for that band but the meter is still referenced to the limiter threshold. This means that limiter thresholds can be set up with the limiter off and with the meters still correctly referenced. If a band has the limiter turned off, the OVER led will be lit continuously as a warning to the user.

Bottom Soft Key

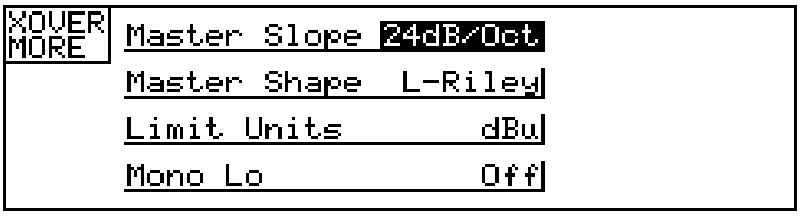
Fr/Hz (Crossover Frequency)



This section allows a fast but basic adjustment of band crossover frequencies. The user can select between the three band crossover frequencies (the crossover of the high edge of band A and the low edge of band B for example), the low edge of band A or the high edge of band D. The crossover point frequency displayed is the average of the adjacent high and low edge frequencies. The outer edge frequencies can be set to OUT at their extreme high and low settings. Note: Each crossover point can be moved throughout the audio band, no checking is made for a band low edge being set above the band high edge thereby muting the band output, nor can the DSC 280 know the frequency capabilities of individual speakers in any system - crossover edges should be moved with care.

The relative heights of the four bands do not represent any level information - the bands are set at slightly different heights to aid the user in identifying the different bands when edge frequencies overlap. Similarly the edges of each band are only an approximation of the true edge shape. The user should refer to the Default Screen for a truer representation of the effect of band edges and band equalization.

12.0 XOver Utility Screen



Quick Reference

1 Press the left or right cursor key to move between utilities.

2 Press the up or down cursor key to adjust the value.

Master Slope **24, 18, 12dB/Oct**
Changing this value will change the band edge slopes for all band edges. If any band edges have different slope values 'Mixed' will appear after the Master Slope box. ***Refer to Section 13.0, XOver More Screen***

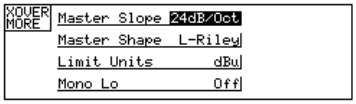
Master Shape **Bessel, Butterw, L-Riley**
Changing this value will change the band edge shapes for all band edges between Bessel, Butterworth and Linkwitz-Riley. It should be noted that Linkwitz-Riley is specified to be 12 or 24dB/Oct although this unit will allow users access to this shape at 18dB/Oct.

Limit Units **dBu, mV**
This item changes the units used for the limiter threshold values on the XOver Screen between dBu and mV.

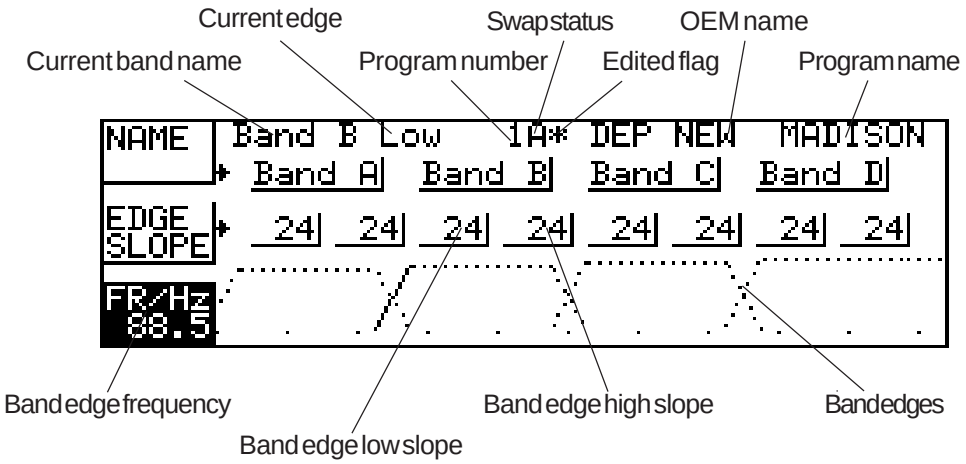
Mono Lo **On, Off**
Mono Lo sums the two A band outputs of the DSC 280 to produce a mono output, such as for a mono sub-bass feed.

Top Soft Key
XOver More

Pressing the top soft key in the XOver Utility Screen will take the user to the XOver More screen. ***See next Section 13.0, XOver More Screen.***



13.0 XOver More Screen



Quick Reference

1 To change a band name, press the top soft key, press the left or right cursor key to select a band and press the up or down cursor key to adjust.

2 To adjust an individual edge slope, press the middle soft key, press the left or right cursor key to select a band and press the up or down cursor key to adjust the slope.

3 To adjust a band edge frequency, press the bottom soft key, press the left or right cursor key to select an edge to adjust and press the up or down cursor key to move it.

The XOver More Screen gives the user access to the low level adjustment of individual edge slopes and frequencies. It also contains the selection of names for each band.

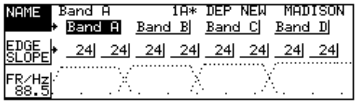
To the left of the top line are the band name of the currently selected band and the band letter and whether the edge being edited is high or low.

The centre of the top line contains the current program number, a letter denoting which backup/swap memory is being used and an asterisk indicating when the program has been edited. To the right of the top line are the current program OEM name and program name.

Top Soft Key

Name

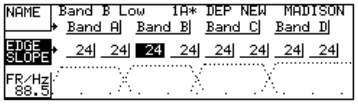
Each band can be named from a preset selection. The list includes basic names such as 'Band A', 'Band B' etc and also band descriptions such as 'Low' and 'Lo Mid'.



Middle Soft Key

Edge Slope

These values set individual edge slopes for each band edge. Slopes are selectable between 12, 18 and 24dB per octave. Note that Linkwitz-Riley crossovers are specified as 12 or 24dB per octave although the DSC 280 will allow similar edge shapes with 18dB per octave.

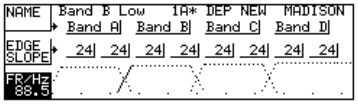


Bottom Soft Key

Fr/Hz (Edge Frequency)

Selecting the bottom soft key allows the user to adjust the frequency of each band edge individually. In this way, two bands can be made to crossover at a different level to that of the defaults which are:

Linkwitz-Riley	-6dB crossover
Bessel and Butterworth	-3dB crossover

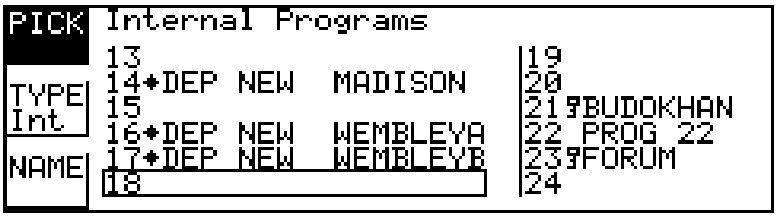


Alternatively two bands could be made to overlap, both bands passing the same frequencies. e.g. Low and Low Mid bands could both have the same low frequency edge.

This section allows the user to spread two or three bands out to form two or three way crossovers. If the edges of a band are set to 'Out' at both high and low ends the result is a full range output with a delay set in the Delay Screen.

Two different two-way systems can be configured to drive two different loudspeaker systems from one input (Band A&B for one system and Band C&D for the other)

14.0 Store and Recall



14.1 Store and Recall in the Default Screen

There are two modes of operation for the STORE and RECALL Keys, depending on whether the unit is in the EDIT mode, as shown by any of the orange LEDs being illuminated. When in the default mode with no orange LEDs illuminated, the STORE and RECALL Keys initiate the storage and naming or retrieval of previously created set-ups or programs, using either the internal memory, or a PCMCIA memory card. An internal program is recalled by pressing the RECALL Key, then pressing the up or down cursor key to select the program and pressing the RECALL Key again. The current parameters are stored to internal memory by pressing the STORE Key, pressing the up or down cursor key to select the program and pressing the STORE Key again. The user may also be invited to lock the program. Parameters are stored and recalled for both channels, regardless of the setting of the SPLIT LEDs.

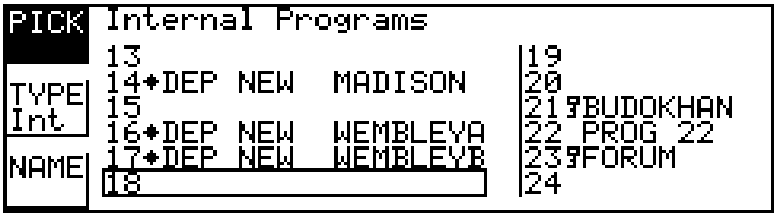
All the current parameters related to the audio path are saved in the program, such as crossover frequencies, levels, limit thresholds, equalizer parameters and delay distances. Certain global parameters such as MIDI channel and display brightness etc. are not stored in individual programs, but are retained separately in the internal memory.

14.2 Store and Recall in an Edit Screen

When the unit is in the EDIT mode, as indicated by one of the orange LEDs being illuminated, the STORE and RECALL Keys are used for the A:B compare function.

Pressing BACKUP (STORE) puts the current parameters in the backup memory for later comparison. Pressing SWAP (RECALL) swaps the current parameters with the backup parameters so that they may be compared both visually and audibly.

15.0 Store Screen



Quick Reference

1 Change to the Default screen and press Store

2 Select the Middle Soft key and press the up or down cursor key to choose the file type and destination

3 Select the Top Soft Key and press the up or down cursor key to select a position to Store the file in.

4 Select the Bottom Soft Key if you wish to enter a new name

5 Press the Store Key a second time.

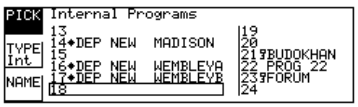
When editing parameters, the new parameters are retained when the unit is switched off, and the unit will power-up with exactly the same parameters as when switched off. This should be considered bad practice however, since these parameters could very easily be edited unless they are stored away safely in one of the internal 60 program memory locations, and perhaps also onto a PCMCIA memory card for archive storage. If the current parameters have been changed since the last program store or recall operation, this condition is indicated by the program number being shown in small characters, or by an asterisk next to the program number in some of the edit screens.

Pressing the STORE Key when no orange EDIT LEDs are illuminated will cause the store screen to be displayed, with the program number PICK item highlighted.

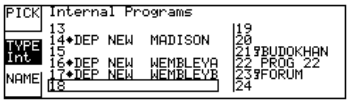
Because the startup logo is now stored in internal memory, the logo is stored to the card for backup purposes whenever an ALL file is saved. ***See Section 18.0 PCMCIA Card for more information.***

Top Soft Key Pick

After selecting the top soft key, the up or down cursor key may then be pressed to select an alternative program number to store the current parameters into. An outline will move through the program list, highlighting the name of the selected program location. The first row of names on each page also shows the OEM name of the stored programs.



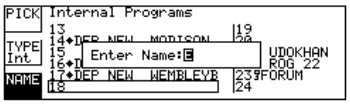
Middle Soft Key Type



The middle soft key will select the TYPE of storage, which may be adjusted by the up or down cursor key from the default INTernal setting to either of the PCMCIA memory card settings; CPrg to store the current program parameters, or CAll to store the entire contents of the internal memory, including all programs, to a PCMCIA memory card.

When storing a file to a card program, the file name will default to the current user name. If the user wishes to use a different file name from the current user name then select NAME and enter a card file name.

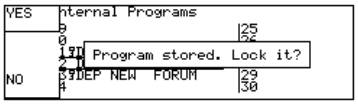
Bottom Soft Key Name



The bottom soft key, NAME, allows the program name, or file name in the case of a PCMCIA card, to be entered or changed. After pressing this key, a naming window will appear on the screen in which the user builds up the required word by pressing the up or down cursor key to select the character required, and pressing the left or right cursor key to move on to the next position.

A second press on the STORE Key will now store the program. If a name has not been selected and the current file type is INTernal, then a default name will be allocated automatically. The default name for a card file is the current user name. The final part of the store process when storing to internal memory is the option to lock the saved program against accidental

15.1 Locking Programs



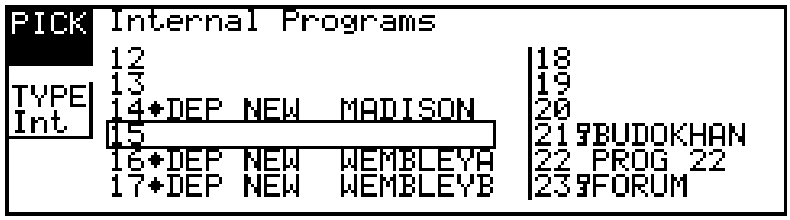
overwriting.

After the second press on the STORE Key, the user will be invited to lock the program by pressing the top YES Key, or to leave the program unlocked by pressing the bottom NO Key. OEM programs are automatically locked.

PCMCIA memory card files cannot be locked. If an attempt is made to store to a locked location, storage is inhibited, and a warning message is displayed. Locked programs are identified in the program list by a key symbol next to the program number. OEM locked programs are identified by a diamond symbol. For unlocking a locked program ***refer to Section 17.0 File Utility Screen.***

To escape from the store process at any time, press the EDIT Key.

16.0 Recall Screen

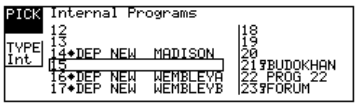


Pressing the RECALL button when no orange EDIT LEDs are illuminated will cause the recall screen to be displayed, with the program number PICK item highlighted.

Top Soft Key

Pick

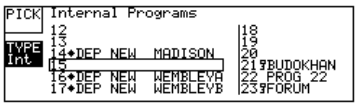
The up or down cursor key may then be pressed to select an alternative program number from which to recall the new parameters. A highlight bar will move through the program list, highlighting the name of the selected program location. The first row of names on each page also shows the OEM name of the stored programs.



Middle Soft Key

Type

The middle soft button will select the TYPE of program or file, which may be adjusted by the up or down cursor key from the default INTernal setting to either of the PCMCIA memory card settings; CPrg to recall a single program, or CAll to set the entire contents of the internal memory to a new set-up, including all programs, from a PCMCIA memory card.



A second press on the RECALL button will now set the current parameters to that of the program. If an attempt is made to recall from a blank location, recall is inhibited, and a warning message is displayed.

To escape from the recall process at any time, press the EDIT button.

17.0 File Utility Screen

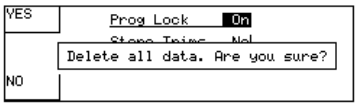


Program Lock **On, Off**
Changing this value will change the Program Lock status of the currently selected Internal program.

Top Soft Key

Format Card

Pressing the Top Soft Key will ask if the user wishes to lose all data on the PCMCIA Card. If the user then presses the Top Soft Key again the card in the card slot will be cleared and formatted ready for use.

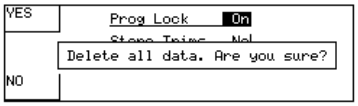


Flash cards cannot be incrementally written to and may only be used to store a CAll file. A CAll file will automatically be written to the Flash card when it is formatted.

Bottom Soft Key

Delete File

Pressing the Bottom Soft Key will delete the currently selected file whether it is an internal program or a card file. The screen will prompt the user whether they really wish to delete the file. Press the Top Soft Key to delete. Delete File is not available when Owner Lock is on. ***Refer to Section 18.0, System Security.***



18.0 PCMCIA Card

The PCMCIA socket inside the unit is designed to use PCMCIA2 memory cards of between 128kbyte and 2Mbyte storage capacity. Files are stored on the card in a 'Pseudo-floppy' format using standard DOS structures. As existing Flash memory cards have erase and re-write limitations, only SRAM memory cards are fully supported in the current PCMCIA card software. The exception is that a full set-up (an XAL file) is stored to a Flash card when it is formatted . The Flash card set-up can then be read at any time, but only written to by performing a complete format again. This is useful for archive purposes as Flash cards have no batteries to run down. **The DSC 280 has been tested using Fujitsu 256k FLASH cards.**

Formatting a FLASH card will also write an XAL file to the card. If a FLASH card is detected when a FORMAT is started, the card is formatted as usual and then a single XAL file is written to the card using the current unit data. No further SAVE operations can be performed on a FLASH card although the saved XAL file can be loaded at any time.

18.1 Card Types

The Card interface requires 68pin PCMCIA2 compatible memory cards. Attribute memory is not required and is not used. The most appropriate card size for the DSC 280 is the 256k byte card which can hold up to 14 complete setup (XAL) files.

SRAM CARDS

128k, 256k, 512k, 1M, 2M. Battery life varies with manufacturer and memory size and should be checked with the card supplier. Expect 4 years or more from a 256k card or around a year with 1Mbyte and above.

Cards are now becoming available from manufacturers such as Centennial that are rechargable. These cards should periodically be left in the card slot of an DSC 280 for a few hours to recharge. Expected battery life for rechargable cards when not plugged into a unit is expected to be around one year; this should be checked with the card supplier.

FLASH CARDS

256k, 512k, 1M, 2M. All FLASH cards are formatted as 256k with a single XAL file recorded on them.

19.0 System Security

Any changes made to an audio system have the potential to be damaging, even if only accidentally made. For this reason several different security systems are built in to the DSC 280 to protect the speakers.

Each of the security levels locks different groups of variables away from adjustment.

19.1 Program Lock

This is a flag that is available for each stored program. A program can be locked when it is stored - the user is prompted when Store is pressed the second time. Alternatively, the program can be locked or unlocked later using the Program Lock entry in the File Utility Screen.***Refer to Section 17.0, File Utility Screen.***

Locking a program in this way is purely to protect the user against accidentally overwriting a stored file. The lock status can be changed by anyone unless the program is OEM locked (see next page).

19.2 Lock Mode On

The Lock Mode entry in the Default Utility Screen can be set to one of four options, On, Off, OEM and Owner. Owner and OEM are covered below.

When Lock Mode is set to ON, no variables can be changed expect for the Display Angle and Backlight and, of course, the Lock Mode. The user can move around the screens to look at any variable but only the mutes are available to be adjusted. When Lock Mode is ON, the Default Screen will display the unit's logo along with the current program number and names.***Refer to Section 6.0, Default Utility Screen - Lock Mode.***

Locking the unit in this way is only to protect the user against other users changing the system setup accidentally or against unauthorised people intentionally changing the system. This status can be changed by anyone who knows the DSC 280.

19.3 Owner Lock

Owner Lock is turned ON and OFF using the Lock Mode variable in the Default Utility Screen.***Refer to Section 6.0, Default Utility Screen - Lock Mode.***To turn Owner Lock ON the user will be asked to enter the current password and then be allowed to change the password to a new, different password if required. To turn Owner Lock OFF, the current password must be entered.**The password in a brand new unit will be 'DSC'.**

The Owner in this case is the person or company who has set up a system and wishes to allow the day-to-day operators restricted access to program recall and adjustment.

Owner Lock ON has the following effects.

The operator cannot recall the Default program and thereby start adjusting the system from scratch. The operator can still recall any programs that the owner has left in the unit and overwrite any that are not OEM protected (see OEM Lock below). For example, if the owner fills all 60 memories with OEM locked programs the operator can only recall the owner's programs and cannot overwrite any of them.

Files cannot be deleted.

Limiter thresholds cannot be adjusted.

The operator can still adjust any variables (except the limiter thresholds) and save the program to an empty program space or over a non-OEM original program.

Locking the unit is this way is to allow the Owner of the system protection against operators resetting the DSC 280. This lock mode can only be changed by people who know the Owner Lock password. Be warned that it is impossible to unlock a unit where the password has been forgotten.

19.4 OEM Lock

The OEM lock mode gives the user the privilege of being able to hide selected parameters from other users view and prevent those parameters from being tampered with. A password is entered by the OEM engineer to protect the integrity of the locked parameters, and this password is necessary to subsequently gain access to the OEM locked parameters and to the parameter locking mechanisms. An OEM name may also be entered to identify the type of system that the program was designed for. The end user may then use the locked OEM program as a basis for operating such a system, and make further modifications to the set-up, to an extent completely controlled by the OEM designer.

Refer to Section 6.0, Default Utility Screen - Lock Mode. To turn OEM Lock ON or OFF the user will be asked to enter the current password. Once in the OEM Hide Screen, the user can change the password. ***Refer to Section 18.6, OEM Hide Screen - OEM Passwd.*** **The default password in a new program will be** '**JBL**'.

When OEM programs are stored, they are automatically program-locked, and identified in the program list by a diamond. The OEM program lock status cannot be undone by the program lock utility, but an OEM program may be over-written by another OEM program with the same OEM password.

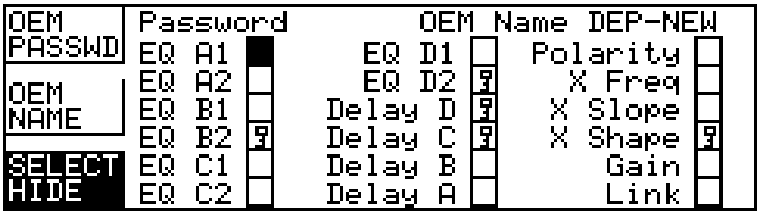
NOTE. To store a program as an OEM program, the unit MUST be in OEM mode when the program is stored, otherwise the stored program will not be identified as an OEM program in the program list.

19.5 Safe

The DSC 280 has a hidden function called SAFE. SAFE mode is intended to be used as a complete lock-out for installations or as the ultimate protection for hire systems etc. When SAFE mode is switched on, all controls are disabled, the screen blanks and the backlight adjusted to dim. When SAFE mode is switched OFF the unit returns to normal with the **mutes on**. With SAFE mode ON the meters still run but no one can change any values within the unit.

As the SAFE mode is intended for security, the details of its use can not be published here. Please consult your dealer for further information on SAFE mode.

19.6 OEM Hide Screen



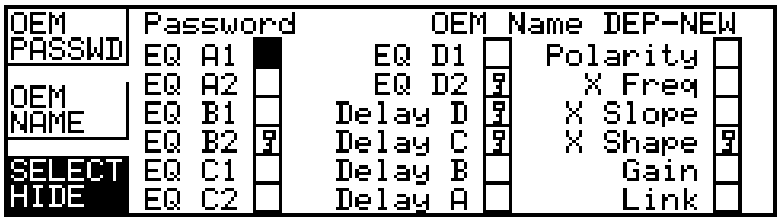
Quick Reference

1 To change the OEM password press top soft key, press the left or right cursor key to select letter and press the up or down cursor key to change the letter.

2 To change the OEM name press middle soft key, press the left or right cursor key to select letter and press the up or down cursor key to change the letter.

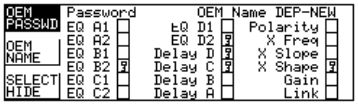
3 To change OEM hides, press bottom soft key, select item to hide by pressing the left or right cursor key, and press the up or down cursor key to toggle the hide status.

The OEM hide screen enables OEM designers to create password protected programs which allow users limited access to the parameters. Hidden parameters are not visible in their respective edit screen, and therefore not adjustable. The designer may, for example, not wish the user to see eq corrections or in-box delays that have been used to tune the sound of a system. It is possible to hide all parameters in some screens such as XOVER and EQ, in which case the user will not be able to enter these screens. Pressing the Edit key will skip the screen and go to the next available edit screen. When in OEM lock mode all parameters are visible whether they are hidden or not, allowing the OEM system designer freedom to adjust the system at a later date without having to turn off all the hides.



Top Soft Key

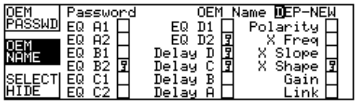
OEM Password



The OEM password is used to prevent unauthorized access to this screen, and must be entered in the default utils before the OEM soft key will be available. ***Refer to Section 6.0 Default Utility for more details***. **The default password is 'JBL'** and this will become active the first time the Lock Mode is changed to OEM. Each letter of the password can be changed by pushing the cursor keys to move between the letters and adjust their values . The letters can be adjusted to any member of the alphabet or space, with the exception of the first letter which cannot be space (this is to force OEM designers to password protect their programs).

Middle Soft Key

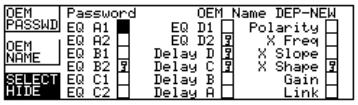
OEM Name



The OEM name appears at the top of most screens, to denote the originator of the current program. The letters can be adjusted to any member of the alphabet, numbers 0-9 and space.

Bottom Soft Key

OEM Hide



OEM hidden items are indicated by a key symbol which can be toggled on and off and selected by pressing the cursor keys.

Appendix A

A.1 Transient Suppressor Replacement

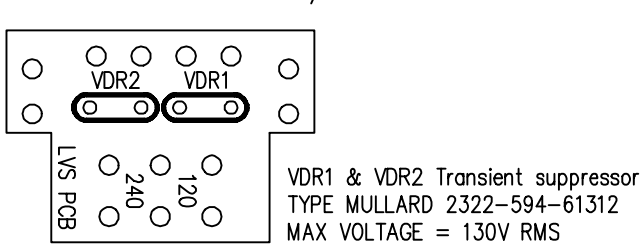
The primary of the mains transformer within the DSC 280 is protected against high voltage spike interference by two voltage dependent resistors. These provide a short circuit to voltage peaks in excess of their maximum rating.

Should the DSC 280 be inadvertently connected to 3 phase line/line voltages, or to 240V when selected to 120V, or any other incorrect voltage, these suppressors are likely to fail in a protective short circuit mode. This will be demonstrated by repeated mains fuse failure when powering up the unit.

Even in this case of extreme overvoltage, the DSC 280 is protected against failure, and the simple removal of these suppressors will allow the unit to be used again. However, it is important that they are replaced as soon as possible to ensure continued protection.

Figure A.1 indicates the location and specification for the suppressors.

A.1 Suppressor location



A.2 100V Tap Conversion

A tap change is available on the DSC 280 to allow the unit to work reliably at mains votages down to 90VAC on the 120V setting and 180VAC on the 240V setting.

To implement the change proceed as follows:

1 Disconnect mains power and remove the unit's top cover.

2 On the small pcb mounted at the rear of the box on the 120/240V selector locate the purple and brown wires and reverse their positions. Locate the orange and yellow wires and reverse their positions. Fuse values do not change from that required to match the voltage selector. The following table shows the wire colors referenced to the silk screen labels on the PCB for both normal and lower voltage applications.

3 Replace the top cover.

WARNING! The maximum mains voltage allowable under these circumstances is 110VAC for the 120V setting and 220VAC for the 240V setting

Silk Screen Label	Cable Color Normal Setting	Cable Color Low Voltage Setting
GRN	Green	Green
YEL	Yellow	Orange
BLUE	Blue	Blue
BRN	Brown	Purple
PUR	Purple	Brown
ORG	Orange	Yellow

A.3 DSC 280 Midi Implementation

FUNCTION	TRANSMITTED	RECOGNISED	REMARKS
BASIC CHANNEL Default	1-16	1-16	Memorised
Changed	1-16	1-16	
MODE	X	X	
NOTE NUMBER	X	X	
VELOCITY	X	X	
AFTER TOUCH	X	X	
PITCH BENDER	X	X	
CONTROL CHANGE			Note 1
NRPN LSB 98	X	O	
NRPN MSB 99	X	O	
Data LSB 38	X	O	
Data MSB 6	X	O	
PROGRAM CHANGE	0-59	0-59	
True Number	1-60	1-60	
SYSTEM EXCLUSIVE			
Dump Request	X	O	
Dump Follows	O	O	
Program follows	X	O	
Program Request	O	O	
RTA Request	O	O	
Message	O	O	
SYSTEM COMMON	X	X	
SYSTEM REAL TIME		X	X
AUX MESSAGES	X	X	

O: Yes

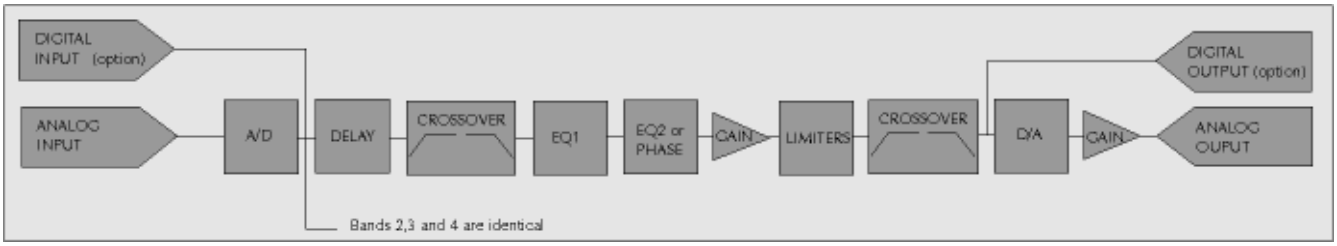
X: No

NOTES:

1: Any parameter out of range will be ignored.

A.4 Specification and Block Diagram

Dynamic Range	**Typically >105dB,** Analogue Input/Output, unweighted, 22Hz to 22kHz
Frequency Response	**±0.25dB**, 15Hz-20kHz with filters out
Distortion (THD)	**<0.01%**, 20Hz-20kHz @+10dBu
Group Delay Distortion	**<±5us**, 20Hz-20kHz
Maximum Processing Delay	**<1.5ms**
Inputs	Electronically balanced & floating (Transformer balanced option)
Input Impedance	**10kOhms**
Maximum Input Level	**+20dBu**, balanced
Outputs	Electronically balanced & floating (Transformer balanced option)
Maximum Output Level	**+20dBu** into 600Ohms
Channel Separation	**>75dB**, 20Hz-20kHz
Stereo Tracking	**<2degrees**, 20Hz-20kHz
Power Supply	AC Mains 50/60Hz, 120V (99V-121V) or 240V (204V-264V) selectable, plus internal 100V setting.
Power Consumption	**<60VA**
Options:	AES/EBU Input Card AES/EBU Output card Input/Output balancing transformers



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