SPECTRUM™ BASS

DIGITAL PHASE MODULATION SYNTHESIZER

user's guide

Intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

CAUTION: Risks of electrical shock — DO NOT OPEN

CAUTION: To reduce the risk of electric shock, do not remove cover. No user serviceable parts inside. Refer Servicing to qualified service personnel.

Contents

PRODUCT DESCRIPTION

Introduction

Congratulations and thank you for purchasing the DPM® Spectrum Bass™. The Peavey DPM Spectrum Bass tone module is an eight-voice sample playback device containing 1 megabyte of classic bass waveforms. These waveforms are run through a dynamic resonant filter to achieve the kind of fat bass sounds that will make your groove tracks stand out. Stacking these sounds up to four deep will give you dense, rattle-the-windows bass.

The Spectrum Bass is four part multi-timbral; that is, up to four distinct presets can be sounding on four separate MIDI channels simultaneously. Also, legato style playing is possible with a separate dedicated mode, or in combination with normal playing by using a legato footswitch controller.

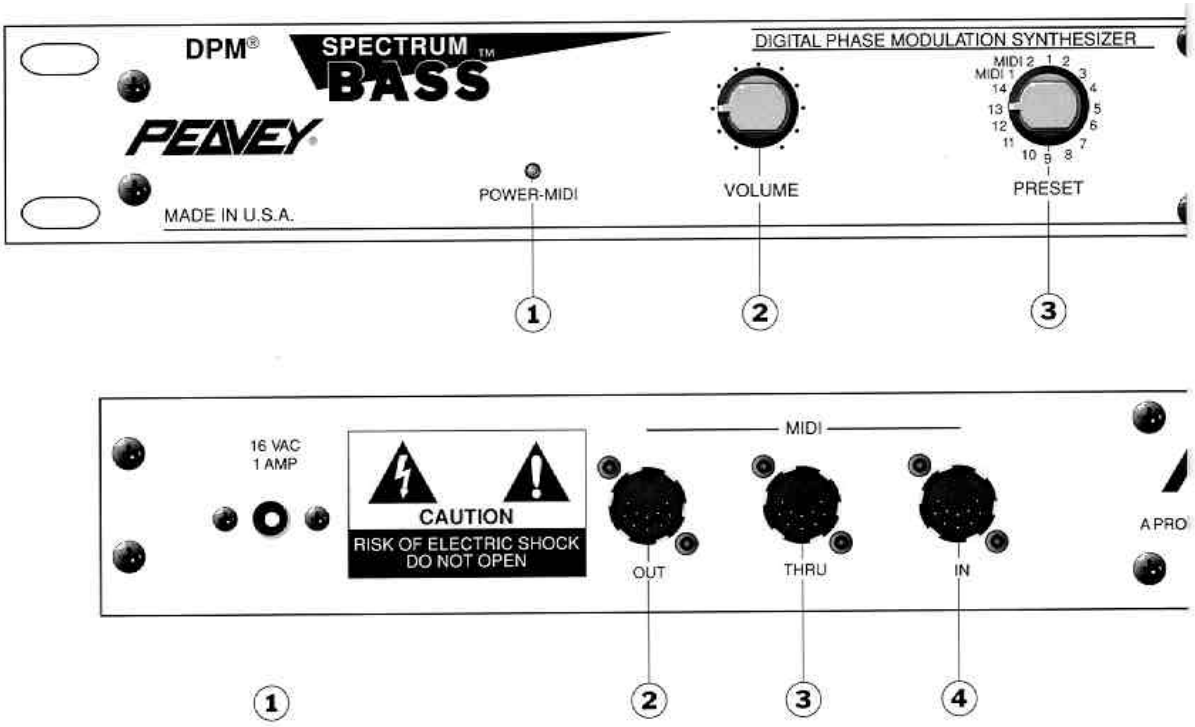
The Spectrum Bass contains an extensive MIDI controller implementation, utilizing the latest sound controllers as defined by the MIDI Manufacturers Association. These controllers allow for much greater expression beyond what is achieved with a mod wheel–check out the section on Controller Usage.

Features

- 8-voice polyphonic
- 4-voice multi-timbral
- 1 megabyte of 16-bit Classic Bass waveforms
- 200 presets
- Layered presets for even fatter sounds
- Interface to keyboards and Peavey Midibase
- Legato response in Mono and Poly and Multi modes
- Fine tune and transpose
- Autoflow for daisy-chaining modules

COMMON TERMS

Legato	-	This is a smooth and unbroken transition between successive notes.
Multi-timbral	-	This means that more than one distinct preset may sound at a time.
Polyphonic	-	This is the simultaneous combination of two or more sounds.
Preset	-	This is a storage location for all parameters pertaining to a sound.
Voice	-	This is the sound that is playing. If something is 4-voice, it means that four sounds can be playing simultaneously.
Waveform	-	This is a wave, like sine or sawtooth, that is used to create the sounds (voices) generated.



THE FRONT PANEL

1. **Power/MIDI LED**
   This is a red LED that glows steadily to indicate the power is on and flashes to indicate that MIDI data is being received.

2. **Volume Knob**
   The *Volume* knob adjusts the overall volume of the Spectrum Bass.

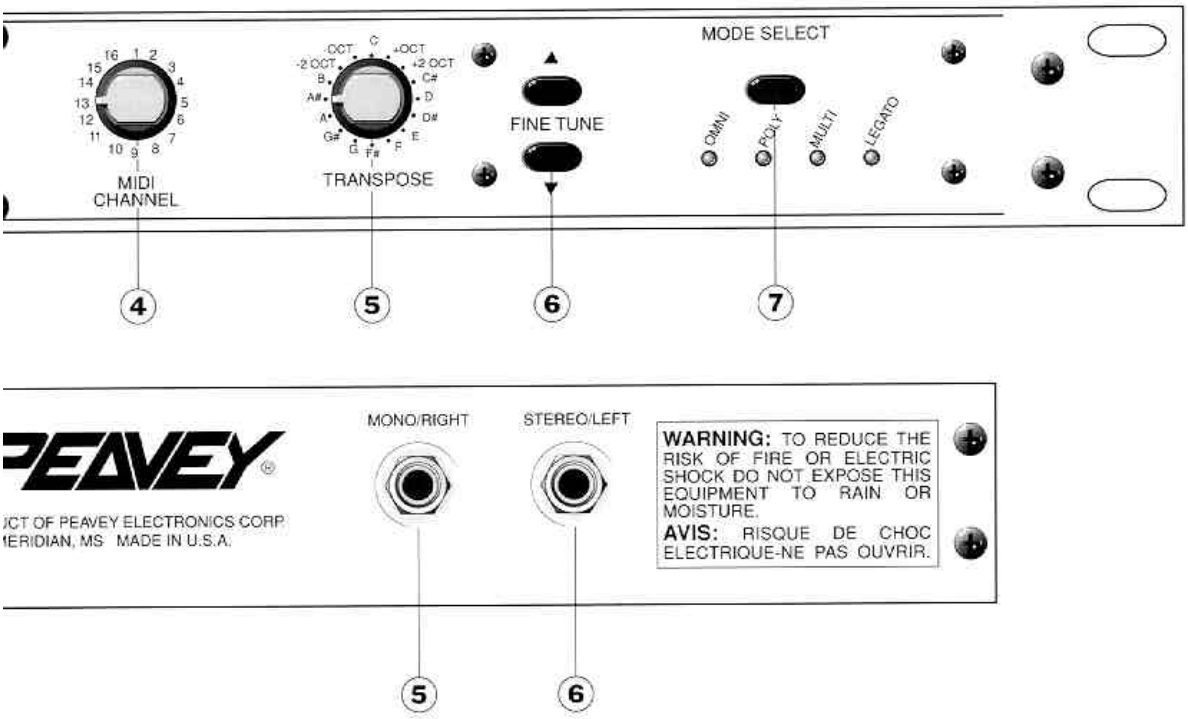
3. **Preset Knob**
   The *Preset* knob is used to select either the first fourteen presets, MIDI 1, or MIDI 2. Selecting MIDI 1 or MIDI 2 allows the Spectrum Bass to access any of the 200 available presets.

4. **MIDI Channel Knob**
   The *MIDI Channel* knob is used to select the MIDI channel. Channels 1-16 are available.

5. **Transpose Knob**
   The *Transpose* knob is used to adjust the pitch. The Spectrum Bass may be transposed any number of semitones to ±1 octave, or it may be transposed a fixed ±2 octaves.

6. **Fine Tune Buttons (Up and Down)**
   The Fine Tune *inc* and *dec buttons* are used to perform adjustments to the master tuning in increments of 1 cent, to a maximum of ±1 semitone. *Pressing both the inc and dec button at the same time will zero out the master tune value.*

7. **Mode Select Button**
   The *Mode Select* button is used to select the MIDI mode. There are six choices available: Omni, Poly, Multi, Legato, Poly-Legato, and Multi-Legato.



THE BACK PANEL

1. **Power Jack**
   Use only the 16-16.5 volt AC 1000 mA adaptor provided. (Peavey Part #00710160)

Caution: Use only the Peavey 16-16.5 volt power supply provided with this product. If the original power supply must be replaced, consult your Peavey dealer or the factory for the correct replacement. Failure to use the correct power supply could result in fire, shock hazard, extensive circuit damage, decreased performance, or non-operation.

2. **MIDI Out Jack**
   This is a standard 5-pin DIN jack used for sending MIDI overflow data from the Spectrum Bass to receiving unit(s).

3. **MIDI Thru Jack**
   This is a standard 5-pin jack used to echo MIDI data received at the MIDI In jack. This means that the receiving unit(s) will receive an exact copy of the MIDI data the Spectrum Bass received.

4. **MIDI In Jack**
   This is a standard 5-pin jack used for receiving MIDI data from the sending unit.

5. **Mono/Right Jack**
   This is a standard 1/4" mono output jack. The output from this jack is the Right channel *if* a plug is inserted into the Stereo/Left jack and is the summed Left and Right channels *if* no plug is inserted into the Stereo/Left jack.

6. **Stereo/Left Jack**
   This is a standard 1/4" stereo output jack. The output from this jack is stereo when used with a stereo cable, with the Left channel on the tip, and the Right channel on the ring.

OPERATION

1.0 Hooking Up

Using the Peavey DPM Spectrum Bass entails little setup to interface with your present system. The front panel consists of an LED to indicate when the power is on (steady *red* glow) and when MIDI data is being received (flashing). The *Volume* knob is used to adjust the output volume of the Spectrum Bass. The *Preset* knob is used to select either the first fourteen presets, MIDI 1, or MIDI 2. The *MIDI Channel* knob is used to select a MIDI channel to send and receive MIDI data on. The *Transpose* knob is used to transpose the pitch. The Fine tune *inc* and *dec buttons* are used for fine tuning the transposed pitch. The *Mode Select* button is used for selecting the MIDI mode.

The back panel consists of the usual MIDI In, Out, and Thru jacks, as well as the power jack for a 16 volt AC wall lump, and two audio jacks. Hooking up your mixer can be via a separate left and right cable, a single stereo cable (plugged into the Left jack with a stereo plug with nothing plugged into the Right jack), or a single mono cable (plugged into the Right jack with a single mono plug with nothing plugged into the Left jack).

To check out the correctness of your cabling, etc., set the *Preset* control to 1, the *Transpose* control to 0, match the MIDI channel control to the channel you will be sending on, and advance the MIDI mode until it indicates straight Poly mode (as opposed to Poly-Legato). The Spectrum Bass should now make sound in response to MIDI Note On commands. If the unit is receiving MIDI data, the Power-MIDI LED will indicate this by flashing. If this is occurring, and yet no sound is coming out, check the volume control, the MIDI channel assignment, and the audio cabling.

2.0 Preset Control

Once you have reached this point, you can check out the first fourteen presets from the front panel by dialing them up with the *Preset* control knob. Adjusting this control to MIDI 1 or MIDI 2 will allow selection of any of the 200 presets by sending a MIDI preset change message from your controller (make sure that program change transmission is enabled on your controller).

MIDI 1 will allow presets 0-99 to be selected, or all 200 (0-199) if your controller can send a Bank Select message (see Appendix D for more information about bank select messages.) Similarly, MIDI 2 will allow presets 100-199 to be selected when sending a preset change message 0-99, or 0-199 in response to a preset change 0-99 and a Bank Select. The current preset is saved at power down and will be present at power up, UNLESS the preset control knob has been moved; the power up preset will reflect this change. Please note that program change messages are filtered out and will have no affect if the *Preset* control is not on one of the MIDI selections. Also note that the preset control is not active when the Spectrum Bass is in the Multi mode; program changes can only occur via MIDI in this mode.

3.0 Transpose Control

The Transpose control knob allows the Spectrum Bass to be transposed any number of semitones to ±1 octave, or it may also be transposed a fixed ±2 octaves.

4.0 MIDI Channel

The MIDI channel control knob allows selection of the MIDI channel that the Spectrum Bass will respond on. This control also determines the channels the device will respond to when in Multi mode. If the *MIDI Channel* control is set to 1, for instance, then the channels enabled for Multi operation will be 1, 2, 3, and 4. If the *MIDI Channel* control is then advanced to channel 2, the channels enabled for Multi operation will be 2, 3, 4, and 5. And so on. More about the Multi setup is in the section on **MIDI Modes.**

5.0 Fine Tune

The Fine Tune *inc* and *dec buttons* will perform adjustment to the Spectrum Bass master tuning in increments of 1 cent, to a maximum of ±1 semitone. Depressing both buttons simultaneously will zero out this master tune value. The current master tune value is saved at power down.

6.0 MIDI Modes and Multi Setup

The Mode Select button will advance you through all the possible MIDI modes and variations that the Spectrum Bass is capable of. This selector will wrap around when advanced past the last selection. The MIDI spec allows for four modes: Omni, Poly, Mono, and Multi. The Spectrum Bass adheres to the MIDI spec for these modes, but also allows for some new and innovative variations as far as legato playing is concerned.

The Legato mode selection will occupy four channels, each channel playing the same preset in a legato fashion. The selection of these channels is the same as just described above for the Multi mode. This mode is normally used with a guitar or bass MIDI controller (the Peavey Midibase, for instance), with each string sending MIDI data on a separate channel.

If legato style playing is desired, yet you don't want to burn four MIDI channels in the process, advance the Mode Select button until both the *Poly* and *Legato* LEDs are on. This setting will behave as in straight poly mode except for the allocation of voices (only one voice sounds). A word here on legato footswitch controller (controller #68): The legato footswitch controller is a newly ratified addition to the MIDI controller list, which will toggle the playing mode between normal and legato (see sidebar for explanation of legato playing style).

The Spectrum Bass responds to this controller, and can be used in the Poly and Multi modes to switch to legato playing style. So, say for instance you are playing in Poly mode, and you send the Spectrum Bass a Legato footswitch message. The Spectrum Bass will now behave as though you had selected the Poly-Legato mode with the Mode Select button (although the LED status will still indicate just Poly). Sending a Legato footswitch message below

Legato Playing Style

Legato playing style for electronic instruments originated with the older monophonic analog synthesizers which used a Control Voltage keyboard. These keyboards not only generated a control voltage which determined pitch, but also a trigger and gate signal which turned on and sustained the envelope of the sound. If a note was triggered and held, depressing another key would not re-trigger the envelope, but just modify the pitch of the sound, similar to the way acoustic instruments play in a legato fashion.

A key up will return to the original pitch. The same response occurs for multiple key downs. The last note depressed will determine the pitch, when released, the top key held will then sound, and so on down the keyboard. A newly triggered envelope does not occur until ALL previous notes are released.

threshold will bring you back into normal playing. This is much more versatile and expressive than a straight Legato mode allows for.

Now, the same sort of playing styles are possible in Multi mode. Advancing the Mode Select button until both the *Multi* and *Legato* LEDs are on will yield a MIDI Multi mode (four channels, each capable of a distinct preset) but with each channel playing in legato fashion. If you happen to be in straight Multi mode and you send the Spectrum Bass a Legato footswitch message above the threshold value, that channel will then switch to a legato playing style. This allows for a mixture of channels playing legato and normal, with the ability to switch back and forth on any of the four channels in real time.

Other capabilities in Multi Mode (or Multi-Legato Mode) include response to program change messages, and a host of other controller messages (see the section on Controller Usage). The program change messages can select the preset that a particular channel plays. Multi mode responds to the same program change messages that were explained in the Preset controller section.

The Multi preset selections roll with the MIDI channel selection. Let's take a second to explain this: If the MIDI channel currently selected is 1, then the Spectrum Bass will respond multi-timbrally on channels 1, 2, 3, and 4. A channel will play whichever preset was selected as a result of a program change message. The Spectrum Bass is initialized at the factory to play presets 1, 2, 3, and 4. Now, changing the MIDI channel to channel 2, for instance, causes Multi response to shift to channels 2, 3, 4, and 5; BUT, the preset selections remain the same. So, assuming the factory preset described above, if the MIDI channel is set to 2, channel 2 will play preset 1, channel 3 will play preset 2, and so on. This a convenient way to accommodate altering your MIDI setup without having to change presets on each channel.

The last presets sent to each channel are saved at power down, and are available immediately at power up. Also, the current MIDI mode is saved at power down.

Q: What if you don't need four channels of multi-timbral bass sounds, say you only need two, and you want to reclaim the other two channels for some of your other MIDI gear?

A: Sending a program change message of 127 will turn a channel **OFF**, and will only be re-established when sent another program change message between 0-99. An alternative would be to set your base channel to 15, so that the Spectrum Bass would only respond to channels 15 and 16.

7.0 Controller Usage

The Spectrum Bass responds to a wealth of MIDI controller messages, adding a variety of expression not normally achieved with a sample playback device.

If your controller lacks the ability to transmit some of these controllers, check out the Peavey PC 1600™, which can transmit any controller on sixteen separate sliders, as well as perform real time MIDI mixdown and Sysex control.

In addition to the usual mod wheel, aftertouch, and sustain messages, the Spectrum Bass responds to the following controllers:

- *Volume Controller (#7)*
  This can be used to control the volume via MIDI, either for overall level control as in Poly mode, or to mix the levels of the four channels comprising the Multi.
- *Pan Controller (#10)*
  This can be used to control the stereo placement of presets as follows:
  Values 0-63 will result in placement from hard left to just left of center.
  Values 64-127 will result in placement from center to hard right.
  This can be used for a set and forget fixed value stereo placement, or in a real time pan sweep.

- *Legato Footswitch Controller (#68)*
  This controller is used to switch the playing style between normal and legato as follows:
  Values 0-63 will result in normal playing style.
  Values 64-127 will result in legato playing style.
  See the section on MIDI Modes for more discussion on legato playing.

- *Sound Variation Controller (#70)*
  This controller can affect the layering of the presets to achieve dense four layer bass sounds from presets that would normally be played as singles. This controller has four discrete levels as follows:
  Values of 0-31 will result in no additional links.
  Values of 32-63 will result in one potential additional link.
  Values of 64-95 will result in two potential additional links.
  Values of 96-127 will result in three potential additional links.
  Note that these levels determine the ***maximum*** number of links a preset will sound. If a preset is already programmed to be a 2-layer combi, the sound variation controller cannot bring it ***below*** its programmed density. Also note that the use of this controller chips away at your maximum polyphony.

- *Release Time Controller (#72)*
  This controller can be used to lengthen the programmed release times. Greater values will result in longer release times, while a value of zero will play the programmed release time.

- *Attack Time Controller (#73)*
  This controller will function as a switch to defeat the programmed velocity sensitivity of envelopes as follows:
  Values 0-63 will retain the programmed velocity sensitivity.
  Values 64-127 will defeat the programmed velocity sensitivity.
  Switching this controller on will result in no variation in filter envelope or amplitude envelope maximum levels.

- *Brightness Controller (#74)*
  This controller will add to, or subtract from, the programmed filter cutoff values as follows:
  Values 0-63 will subtract from the programmed filter cutoff.

Values 64-127 will add to the programmed filter cutoff.
This can result in great variation by using either a set and forget fixed value, or a real time dynamic filter sweep.

8.0 Global Bend Range

The Pitch Bend range used by the Spectrum Bass is a global parameter set to a whole step at the factory. It can be changed to a different setting, however, and is saved at power down. The Fine Tune *inc* and *dec buttons* and the Transpose knob are used together to change the Pitch Bend range. *On power up*, if the Fine Tune *inc* and *dec buttons* are held simultaneously, the Transpose knob setting will be interpreted as the new Pitch Bend range. This will not disturb (zero out) your saved Fine Tune value, as long as this is done only while the unit is powering up. The Transpose knob setting will be interpreted as follows:

Transpose Knob Setting	Global Pitch Bend Range
+oct	1 Octave
+2 oct	2 Octaves
C#	Half Step
D	Whole Step
D#	Minor Third
E	Major Third
F	Fourth
F#	Tritone
G	Perfect Fifth
G#	Minor Sixth
A	Major Sixth
A#	Minor Seventh
B	Major Seventh
-2 oct	2 Octaves
-oct	1 Octaves

9.0 Autoflow

Autoflow provides a simple and instant way to configure a second Spectrum Bass module for overflow purposes. When a MIDI cable is connected from the MIDI Out of the first unit to the MIDI In of the second, overflow status is automatically detected. Autoflow will cause the first unit in the chain to send out Note On and other events to the second unit when the maximum polyphony (8 voices) has been exceeded.

Autoflow mode is intended to work with additional Spectrum Bass modules which have the same configuration as the first in the chain–channel, MIDI Mode, Multi presets, etc. Using Autoflow with any other MIDI tone module may not produce the expected results.

APPENDIX A

MIDI Implementation Chart

Date: 5/92

Model: *SPECTRUM BASS*

Version: 1.0

Function	Transmitted*	Recognized	Remarks
Basic Default Channel Channel	1 1-16	1 1-16	
Mode Default Messages Altered	X X X	1, 3, 4, MULTI X X	
Note Number True Voice	24-108	24-108	
Velocity Note On Note Off	O X	O X	
After Key's Touch Ch's	X O	X O	
Pitch Bender	O	O	
Control Change	0, 32 - Bank Select 1 - Mod Wheel 4 - Foot 7 - Volume 10 - Pan 68 - Legato Footswitch 70 - Sound Variations 72 - Release 73 - Attack Time 74 - Brightness 121 - Reset All Controls	0, 32 - Bank Select 1 - Mod Wheel 4 - Foot 7 - Volume 10 - Pan 68 - Legato Footswitch 70 - Sound Variations 72 - Release 73 - Attack Time 74 - Brightness 121 - Reset All Controls	
Prog Change True#	0 - 99	0 - 99	
System Exclusive	O	O	
System : Song Pos : Song Sel Common : Tune	X X X	X X X	
System : Clock Real Time : Commands	X X	X X	
Aux : Local ON/OFF Mes- : All Notes Off sages : Active Sense : Reset	X O X X	X O X X	
Notes	* Transmitted in Overflow		

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

O : Yes
X : No

APPENDIX B

Parameters Saved on Power Down

The Spectrum Bass has a small EEPROM memory which is used to store global parameters.

The following parameters are saved on power down and recalled on power up:

- Fine Tune
- MIDI Mode
- Current Program
- Multi Program Assignments
- Global Bend Range

Continuous controller values (including controller #7) are *not* saved.

APPENDIX C

System Exclusive and Voice Architecture

The Spectrum Bass has a System Exclusive implementation which makes it possible to perform rudimentary patch editing for a single patch residing in the edit buffer. The contents of this edit buffer are lost on power down.

Spectrum Bass System Exclusive Command Format

F0	System Exclusive Command
00 00 1B	Peavey System Exclusive
02	Keyboard Family I.D.
08	Spectrum Bass I.D.
<CH>	MIDI In Channel
08	Update Edit Buffer Command
<ph, pl, vh, vl>	Updates the Memory Byte at parameter offset ph, pl
F7	End of System Exclusive

Note: Parameter offsets are 7-bitized and values are nibblized.

Example 1:
For a desired Filter resonance value of 27 (1bh), the following string would be sent:

F0 00 00 1B 02 08 00 08 00 23 01 0b F7

This is assuming the Spectrum Bass is on MIDI channel 1. Notice how the value of 1ah is nibblized.

Example 2:
For a desired oscillator coarse tuning value of -12 (F4h), the following string would be sent:

F0 00 00 1B 02 08 00 08 00 10 0f 04 F7

Notice that negative values are represented in two's complement.

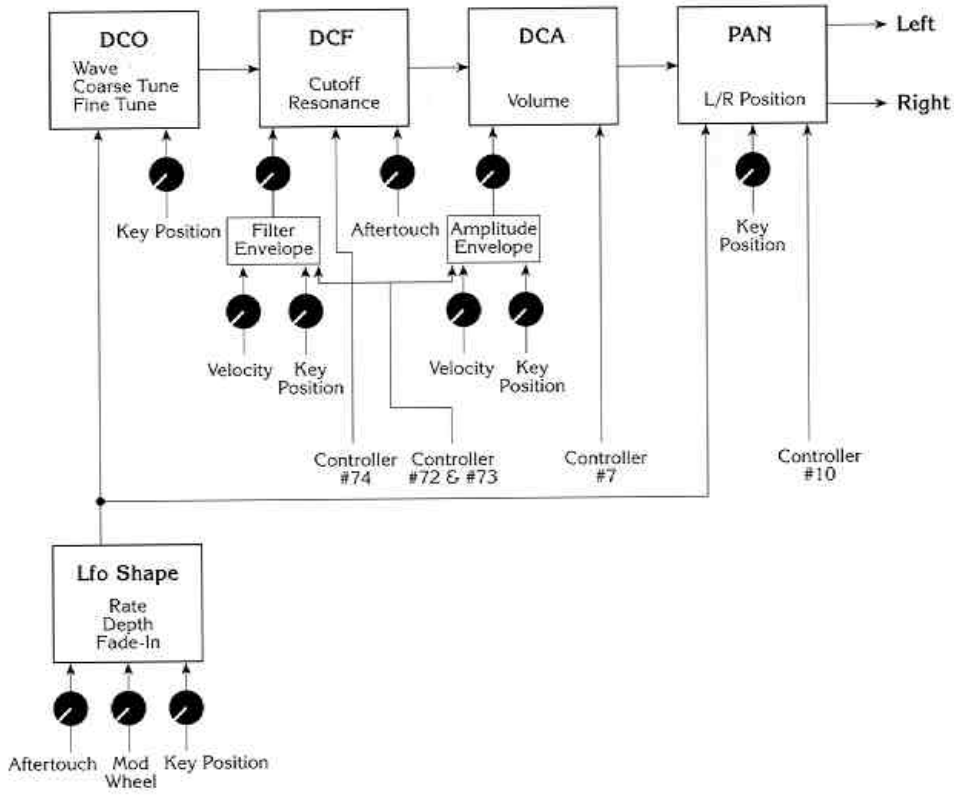
The following is a table of program block offsets for the Spectrum Bass.

Variable Name	*Offset*	*Description*	*Range*
Reserved	0-14	Reserved program bytes	
OscWave	15	Osc Waveshape	0 to 51
OscCoarse	16	Coarse Tuning offset	-24 to 24
OscFine	17	Oscillator Fine Tuning	-99 to 99
OscKbdTrk	18	Sens to Keyboard Modulation	-99 to 99
Reserved	19	Reserved program byte	
LfoSens	20	Sens to LFO	-99 to 99
Reserved	21-33	Reserved program bytes	

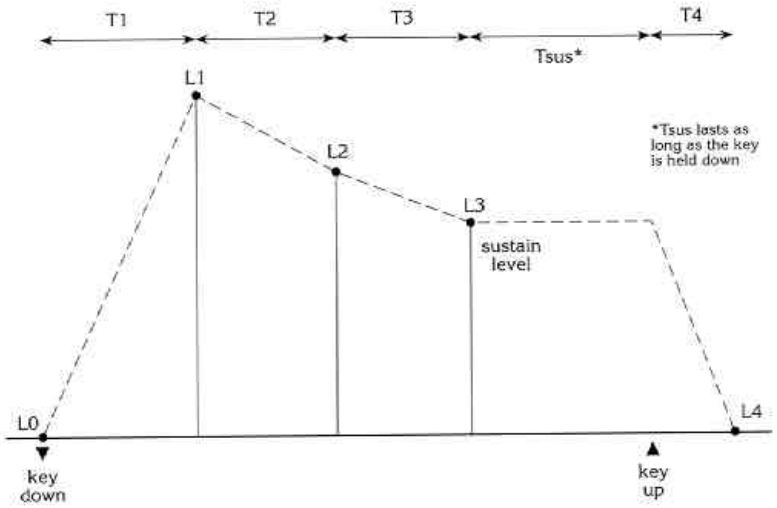
Cutoff	34	Programmed Filter Cutoff	0 to 99
Res	35	Programmed Filter Resonance	0 to 99
Reserved	36	Reserved program byte	
FEnvSens	37	Filter Envelope Sensitivity	-99 to 99
Reserved	38	Reserved program byte	
FEnvVSens	39	Filter Env Amount Velocity Mod	-99 to 99
FEnvKSens	40	Filter Env Amount Keyboard Mod	-99 to 99
FRateVelSens	41	Filter Env Rate Velocity Mod	-99 to 99
FRateKbdSens	42	Filter Env Rate Keyboard Mod	-99 to 99
FEnv Levs	43-47	Five Filter Env Levels	0 to 99
FEnvRates	48-51	Four Filter Env Rates	0 to 99
AmpEnvVSens	52	Amp Env Amount Velocity Mod	-99 to 99
AmpEnvKSens	53	Amp Env Amount Keyboard Mod	-99 to 99
RateVelSens	54	Amp Env Rate Velocity Mod	-99 to 99
RateKbdSens	55	Amp Env Rate Keyboard Mod	-99 to 99
AmpEnvLevs	56-59	Four Amp Env Levels	0 to 99
AmpEnvRates	60-63	Four Amp Env Rates	0 to 99
LfoRate	64	LFO Programmed Rate	0 to 99
LfoShape	65	LFO Programmed Shape	0 to 4
LfoAmount	66	LFO Programmed Amount	0 to 99
LfoFadeIn	67	LFO Fade In Rate	0 to 99
AmtWhlSens	68	LFO Amount Wheel Sensitivity	-99 to 99
AmtKbdSens	69	LFO Rate Wheel Sensitivity	-99 to 99
Volume	70	Programmed Volume	0 to 99
Pan	71	Programmed pan Location	-99 to 99
PanKbdSens	72	Pan Keyboard Mod Amount	-99 to 99
PanLfoSens	73	Pan LFO Mod Amount	-99 to 99
Reserved	74	Reserved Program Byte	-99 to 99
ProgType	75	Single, Dual, Triple, or Quad	0 to 3
M1KeyLow	76	Base Prog Low Key Response	0 to 127
M1KeyHi	77	Base Prog High Key Response	0 to 127
M1VelLow	78	Base Prog Low Velocity Response	0 to 127
M1VelHi	79	Base Prog High Velocity Response	0 to 127
M1Volume	80	Base Prog Volume Scalar	0 to 99
M1Tpose	81	Base Prog Transpose Value	-24 to 24
M1Delay	82	Base Prog Delay Start	0 to 99
M1Detune	83	Base Prog Detune	-99 to 99
M1Spares	84-85	2 Spares	
M2KeyLow	86	Link #2 Prog Low Key Response	0 to 127
M2KeyHi	87	Link #2 Prog High Key Response	0 to 127
M2VelLow	88	Link #2 Prog Low Velocity Response	0 to 127
M2VelHi	89	Link #2 Prog High Velocity Response	0 to 127
M2Volume	90	Link #2 Prog Volume Scalar	0 to 99
M2Tpose	91	Link #2 Prog Transpose Value	-24 to 24
M2Delay	92	Link #2 Prog Delay Start	0 to 99
M2Detune	93	Link #2 Prog Detune	-99 to 99
M2Prognum	94-95	Link #2 Prog Number	0 to 299
M3KeyLow	96	Link #3 Prog Low Key Response	0 to 127
M3KeyHi	97	Link #3 Prog High Key Response	0 to 127
M3VelLow	98	Link #3 Prog Low Velocity Response	0 to 127

M3VelHi	99	Link #3 Prog High Velocity Response	0 to 127
M3Volume	100	Link #3 Prog Volume Scalar	0 to 99
M3Tpose	101	Link #3 Prog Transpose Value	-24 to 24
M3Delay	102	Link #3 Prog Delay Start	0 to 99
M3Detune	103	Link #3 Prog Detune	-99 to 99
M3Prognum	104-105	Link #3 Prog Number	0 to 299
M4KeyLow	106	Link #4 Prog Low Key Response	0 to 127
M4KeyHi	107	Link #4 Prog High Key Response	0 to 127
M4VelLow	108	Link #4 Prog Low Velocity Response	0 to 127
M4VelHi	109	Link #4 Prog High Velocity Response	0 to 127
M4Volume	110	Link #4 Prog Volume Scalar	0 to 99
M4Tpose	111	Link #4 Prog Transpose Value	-24 to 24
M4Delay	112	Link #4 Prog Delay Start	0 to 99
M4Detune	113	Link #4 Prog Detune	-99 to 99
M4Prognum	114-115	Link #4 Prog Number	0 to 299
FPrsSens	116	Filter Cut Pressure Response	-99 to 99
LprsSens	117	LFO Amt Pressure Response	-99 to 99
Reserved	118-151	Reserved program bytes	

Voice Architecture



Filter & Amplitude Envelope Structure



APPENDIX D

Bank Select Messages

The Bank Select message has been defined by the MIDI Manufacturers Association to consist of control change numbers 00h and 20h as shown below:

B*n*h	Control change status byte on channel *n*
00h	Bank Select
0vvvvvvv	MSB (zeros for the Spectrum Bass)
20h	Bank Select
0vvvvvvv	LSB (zero or one for the Spectrum Bass)
C*n*h	Program Change on channel *n*
0ppppppp	Program Number

Note that the Bank Select message ***must*** be followed by a Program Change message.

Example 1:
The Spectrum Bass will move to the program 27 in bank 1 if the following string is sent:

B0 00 00 20 01 C0 1a

Example 2:
The Spectrum Bass (on MIDI Channel 16) will move to program 27 in bank 0 (zero) if the following string is sent:

Bf 00 00 20 00 Cf 1a

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PEAVEY ELECTRONICS CORPORATION ("PEAVEY") warrants this product, EXCEPT for covers, footswitches, patchcords, tubes and meters, to be free from defects in material and workmanship for a period of one (1) year from date of purchase, PROVIDED, however, that this limited warranty is extended only to the original retail purchaser and is subject to the conditions, exclusions, and limitations hereinafter set forth:

PEAVEY 90-DAY LIMITED WARRANTY ON TUBES AND METERS

If this product contains tubes or meters, Peavey warrants the tubes or meters contained in the product to be free from defects in material and workmanship for a period of ninety (90) days from date of purchase; PROVIDED, however, that this limited warranty is extended only to the original retail purchaser and is also subject to the conditions, exclusions, and limitations hereinafter set forth.

CONDITIONS, EXCLUSIONS, AND LIMITATIONS OF LIMITED WARRANTIES

These limited warranties shall be void and of no effect, if:

a. The first purchase of the product is for the purpose of resale; or
b. The original retail purchase is not made from an AUTHORIZED PEAVEY DEALER; or
c. The product has been damaged by accident or unreasonable use, neglect, improper service or maintenance, or other causes not arising out of defects in material or workmanship; or
d. The serial number affixed to the product is altered, defaced, or removed.

In the event of a defect in material and/or workmanship covered by this limited warranty, Peavey will:

a. In the case of tubes or meters, replace the defective component without charge.
b. In other covered cases (i.e., cases involving anything other than covers, footswitches, patchcords, tubes or meters), repair the defect in material or workmanship or replace the product, at Peavey's option;
and provided, however, that, in any case, all costs of shipping, if necessary, are paid by you, the purchaser.

THE WARRANTY REGISTRATION CARD SHOULD BE ACCURATELY COMPLETED AND MAILED TO AND RECEIVED BY PEAVEY WITHIN FOURTEEN (14) DAYS FROM THE DATE OF YOUR PURCHASE.

In order to obtain service under these warranties, you must:

a. Bring the defective item to any PEAVEY AUTHORIZED DEALER or AUTHORIZED PEAVEY SERVICE CENTER and present therewith the ORIGINAL PROOF OF PURCHASE supplied to you by the AUTHORIZED PEAVEY DEALER in connection with your purchase from him of this product.
If the DEALER or SERVICE CENTER is unable to provide the necessary warranty service you will be directed to the nearest other PEAVEY AUTHORIZED DEALER or AUTHORIZED PEAVEY SERVICE CENTER which can provide such service.

OR

b. Ship the defective item, prepaid, to:

PEAVEY ELECTRONICS CORPORATION
International Service Center
Highway 80 East
MERIDIAN, MS 39301

including therewith a complete, detailed description of the problem, together with a legible copy of the original PROOF OF PURCHASE and a complete return address. Upon Peavey's receipt of these items:
If the defect is remedial under these limited warranties and the other terms and conditions expressed herein have been complied with, Peavey will provide the necessary warranty service to repair or replace the product and will return it, FREIGHT COLLECT, to you, the purchaser.

Peavey's liability to the purchaser for damages from any cause whatsoever and regardless of the form of action, including negligence, is limited to the actual damages up to the greater of $500.00 or an amount equal to the purchase price of the product that caused the damage or that is the subject of or is directly related to the cause of action. Such purchase price will be that in effect for the specific product when the cause of action arose. This limitation of liability will not apply to claims for personal injury or damage to real property or tangible personal property allegedly caused by Peavey's negligence. Peavey does not assume liability for personal injury or property damage arising out of or caused by a non-Peavey alteration or attachment, nor does Peavey assume any responsbility for damage to interconnected non-Peavey equipment that may result from the normal functioning and maintenance of the Peavey equipment.

UNDER NO CIRCUMSTANCES WILL PEAVEY BE LIABLE FOR ANY LOST PROFITS, LOST SAVINGS, ANY INCIDENTAL DAMAGES, OR ANY CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT, EVEN IF PEAVEY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

THESE LIMITED WARRANTIES ARE IN LIEU OF ANY AND ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE; PROVIDED, HOWEVER, THAT IF THE OTHER TERMS AND CONDITIONS NECESSARY TO THE EXISTENCE OF THE EXPRESSED, LIMITED WARRANTIES, AS HEREINABOVE STATED, HAVE BEEN COMPLIED WITH, IMPLIED WARRANTIES ARE NOT DISCLAIMED DURING THE APPLICABLE ONE-YEAR OR NINETY-DAY PERIOD FROM DATE OF PURCHASE OF THIS PRODUCT.

SOME STATES DO NOT ALLOW LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THESE LIMITED WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

THESE LIMITED WARRANTIES ARE THE ONLY EXPRESSED WARRANTIES ON THIS PRODUCT, AND NO OTHER STATEMENT, REPRESENTATION, WARRANTY, OR AGREEMENT BY ANY PERSON SHALL BE VALID OR BINDING UPON PEAVEY.

In the event of any modification or disclaimer of expressed or implied warranties, or any limitation of remedies, contained herein conflicts with applicable law, then such modification, disclaimer or limitation, as the case may be, shall be deemed to be modified to the extent necessary to comply with such law.

Your remedies for breach of these warranties are limited to those remedies provided herein and Peavey Electronics Corporation gives this limited warranty only with respect to equipment purchased in the United States of America.

INSTRUCTIONS — WARRANTY REGISTRATION CARD

1. Mail the completed WARRANTY REGISTRATION CARD to:

PEAVEY ELECTRONICS CORPORATION
POST OFFICE BOX 2898
MERIDIAN, MISSISSIPPI 39302-2898

   a. Keep the PROOF OF PURCHASE. In the event warranty service is required during the warranty period, you will need this document. **There will be no identification card issued by Peavey Electronics Corporation.**
2. IMPORTANCE OF WARRANTY REGISTRATION CARDS AND NOTIFICATION OF CHANGES OF ADDRESSES:
   a. Completion and mailing of WARRANTY REGISTRATION CARDS — Should notification become necessary for any condition that may require correction, the REGISTRATION CARD will help ensure that you are contacted and properly notified.
   b. Notice of address changes — If you move from the address shown on the WARRANTY REGISTRATION CARD, you should notify Peavey of the change of address so as to facilitate your receipt of any bulletins or other forms of notification which may become necessary in connection with any condition that may require dissemination of information or correction.
3. You may contact Peavey directly by telephoning (601) 483-5365.

IMPORTANT SAFETY INSTRUCTIONS

WARNING When using electric products, basic cautions should always be followed, including the following.

1. Read all safety and operating instructions before using this product.
2. All safety and operating instructions should be retained for future reference.
3. Obey all cautions in the operating instructions and on the back of the unit.
4. All operating instructions should be followed.
5. This product should not be used near water, i.e., a bathtub, sink, swimming pool, wet basement, etc.
6. This product should be located so that its position does no interfere with its proper ventilation. It should not be placed flat against a wall or placed in a built-in enclosure that will impede the flow of cooling air.
7. This product should not be placed near a source of heat such as a stove, radiator, or another heat producing amplifier.
8. Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
9. Never break off the ground pin on the power supply cord. For more information on grounding, write for our free booklet "Shock Hazard and Grounding."
10. Power supply cords should always be handled carefully. Never walk or place equipment on power supply cords. Periodically check cords for cuts or signs of stress, especially at the plug and the point where the cord exits the unit.
11. The power supply cord should be unplugged when the unit is to be unused for long periods of time.
12. If this product is to be mounted in an equipment rack, rear support should be provided.
13. Metal parts can be cleaned with a damp rag. The vinyl covering used on some units can be cleaned with a damp rag, or an ammonia-based household cleaner if necessary. Disconnect unit from power supply before cleaning.
14. Care should be taken so that objects do not fall and liquids are not spilled into the unit through the ventilation holes or any other openings.
15. This unit should be checked by a qualified service technician if
    a. The power supply cord or plug has been damaged.
    b. Anything has fallen or been spilled into the unit.
    c. The unit does not operate correctly.
    d. The unit has been dropped or the enclosure damaged.
16. The user should not attempt to service this equipment. All service work should be done by a qualified service technician.
17. This product should be used only with a cart or stand that is recommended by Peavey Electronics.
18. Exposure to extremely high noise levels may cause a permanent hearing loss. Individuals vary considerably in susceptibility to noise induced hearing loss, but neary everyone will lose some hearing if exposed to sufficiently intense noise for a sufficient time.

    The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the following permissible noise level exposures

Duration Per Day In Hours	Sound Level dBA, Slow Response
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

According to OSHA, any exposure in excess of the above permissible limits could result in some hearing loss.

Ear plugs or protectors in the ear canals or over the ears must be worn when operating this amplification system in order to prevent a permanent hearing loss if exposure is in excess of the limits as set forth above. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels such as this amplification system be protected by hearing protectors while this unit is in operation.

SAVE THESE INSTRUCTIONS

PEAVEY®

Features and specifications subject to change without notice.

Peavey Electronics Corporation 711 A Street / Meridian, MS 39302-2898 / U.S.A. / (601) 483-5365 / Telex: 504115 / Fax: 486-1278

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