

Appendices

- Appendix 1 MIDI Program Numbers on the ESQ 1
- Appendix 2 ESQ 1 MIDI Implementation Specifications
- Appendix 3 ESQ 1 MIDI Parameter Number List
- Appendix 4 ESQ 1 MIDI Implementation Chart
- Appendix 5 Program Parameter Sheet
- Appendix 6 Program Control Block Structure
- Appendix 7 Track Sheet

MIDI Program Numbers on the ESQ 1

The Chart below shows the Program Number of each Internal and Cartridge Program on the **ESQ 1**. For each Program Bank, the chart shows the Program number that corresponds to each of the ten locations on the Display. For a given **ESQ 1** Program, this number is:

- 1) The Program Number (plus 1; see note below) that will be sent out over MIDI whenever the corresponding **ESQ 1** Program is selected (assuming Program Changes are Enabled);
- 2) The Program Number that will cause the corresponding **ESQ 1** Program to be selected when it is received over MIDI; and
- 3) The number that will show on the **TRACK PROG NUM** Sub-Page of the **Mix/MIDI** Page, when the corresponding Program is selected for a Track on the **Tracks Select** Page.

Internal Memory	Bank 1	001	002	003	004	005
		006	007	008	009	010
	Bank 2	011	012	013	014	015
		016	017	018	019	020
Cart A	Bank 3	021	022	023	024	025
		026	027	028	029	030
	Bank 4	031	032	033	034	035
		036	037	038	039	040
Cart B	Bank 1	041	042	043	044	045
		046	047	048	049	050
	Bank 2	051	052	053	054	055
		056	057	058	059	060
Cart B	Bank 3	061	062	063	064	065
		066	067	068	069	070
	Bank 4	071	072	073	074	075
		076	077	078	079	080
Cart B	Bank 1	081	082	083	084	085
		086	087	088	089	090
	Bank 2	091	092	093	094	095
		096	097	098	099	100
Cart B	Bank 3	101	102	103	104	105
		106	107	108	109	110
	Bank 4	111	112	113	114	115
		116	117	118	119	120

Note: True MIDI Program Numbers begin at 00 instead of one. To determine the true MIDI Program number, subtract 1 from the number shown in the table above.

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

1.0 Sequencer Dump - Mirage Format

1.1 Mirage Wavesample Absolute Dump Format

NOTE: The format of this message is identical to the Mirage wavesample dump absolute data message described in the MIDI documentation included in the Mirage Advanced Samplers Guide.

11110000	System Exclusive status byte
00001111	ENSONIQ Code
00000001	Mirage Code
00001100	Wavesample dump absolute data code
000nllll	n=0 lower, n=1 upper
0000llll	l=low byte of start address
0000hhhh	
0000hhhh	h= high byte of start address
0000llll	
0000llll	l= low byte of end address
0000hhhh	
0000hhhh	h= high byte of end address
0000llll	
0000hhhh	Data: each byte is sent as 2 nybbles, with the most significant nybble of each byte reset. (l = low nybble, h = high nybble)
0ccccccc	c=check sum formed by modulo 128 add of all of the nybbles plus the low and high pointers
11110111	End of exclusive

1.2 Formation of the Sequence Dump Data Messages

Four wave dump packets are actually transmitted in the process of transferring sequence data from the ESQ-1 to a Mirage.

1.2.1 I.D. Packet

The first packet contains 0 1 2 3 4 5 6 7, followed by the amount of sequencer RAM used in the ESQ-1. This data is sent to location FF00H through FF0AH in the upper bank.

This is necessary because, during reloading, this information will be checked by the

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

ESQ-1 to insure that the data is actually sequencer information and that the ESQ-1 has sufficient memory to load the stored sequence data.

1.2.2 Sequencer Variables Packet

The second packet contains the sequencer's internal variables, as well as Sequence Header information, etc. The data in the second packet is sent to locations 0000 through 0132H in the upper bank.

1.2.3 Sequence Data Packet

The third packet is the sequence data itself. It is sent to location 0000H in the lower bank. The length of the message depends on how much sequence memory is currently used in the ESQ-1.

1.2.4 Internal Bank Programs

The fourth packet contains the 40 voice programs from the four internal banks of the ESQ-1. The program data is sent to locations 1000H through 1FF0H in the upper bank.

1.3 Wave Sample Requests

The ESQ-1 will issue up to four Mirage wavesample absolute dump messages in order to retrieve the sequence data from a Mirage. Refer to the Mirage Advanced Samplers Guide for more information on these messages.

11110000	System Exclusive
00001111	ENSONIQ Code
00000001	Mirage Code
00001010	Wavesample absolute request code
000nllll	n=0 lower, n=1 upper
0000llll	l=low byte of start address
0000hhhh	
0000hhhh	h= high byte of start address
0000llll	
0000llll	l= low byte of end address
0000hhhh	
0000hhhh	h= high byte of end address
11110111	End of exclusive

1.3.1 I.D Packet Request

Requests the Mirage to send the data from upper bank locations FF00H through FF0AH.

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

The data sent in response to this request is then checked to determine if the data in the Mirage is actually ESQ-1 sequence data. If it is, then the size of the data block is also checked to determine if the receiving ESQ-1 has sufficient available memory to load the data. This is useful in determining whether or not the sequencer memory expansion cartridge is required to load the sequence data.

1.3.2 Sequencer Variables Request

Requests the Mirage to send the sequencer variables and sequence header data from upper bank locations 0000H through 0132H.

1.3.2 Sequence Data Request

Requests to send the data from the lower bank starting at location 0000H. The end address is determined by the data that was retrieved in the I.D. packet.

1.3.3 Voice Program Request

An optional request to send the voice program data in locations 1000H through 1FF0H of the upper bank. The user may specify whether or not to load the internal program banks of the ESQ-1 with this data when the sequence load command is initiated.

2.0 ESQ-1 System Exclusive Format

2.1 ESQ-1 System Exclusive Header

All ESQ-1 System Exclusive messages start with the following header. The receiving ESQ-1 will only recognize system exclusive messages if the MIDI channel number in the message is the same as the MIDI base channel selected on its MIDI page and its MIDI enable parameter is set to recognize system exclusive messages (i.e the display should show ENABLE=KEYS+CT+PC+SS+SX).

11110000	System Exclusive status byte
00001111	ENSONIQ I.D. code
00000010	ESQ Product I.D. code
0000nnnn	MIDI channel number

2.2 Program Dumps

To be able to receive this data, the ESQ-1 must be in program select mode (i.e. one of the program bank pages must be displayed) and the MIDI enable parameter on the MIDI page must be set to receive system exclusive messages.

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

2.2.1 Single Program Dump

This transmits the program currently selected on the synth main keyboard (the "straight-synth" program). Refer to Table 1 for details on the structure of the program.

xxxxxxx	ESQ System Exclusive header
00000001	Single Program Dump code
0000llll 0000hhhh	2 nybbles per byte of program data 102 data bytes (204 nybble-ized MIDI bytes) l = low nybble, h = high nybble
11110111	End of exclusive

2.2.2 All Program Dump

This message transmits the 40 programs currently in the four internal banks.

xxxxxxx	ESQ System Exclusive header
00000010	All Program Dump code
0000llll 0000hhhh	2 nybbles per byte of program data 102 * 40 data bytes (9160 nybble-ized MIDI bytes) l = low nybble, h = high nybble
11110111	End of exclusive

2.3 Sequence dumps

Sequencer dumps are transmitted as a multi-packet sequence of messages. The transmitter first sends a dump alert packet. This packet contains the size of the sequence to be transmitted. If the receiver can accept this amount of data it sends an accept message; otherwise it sends a reject message.

After the transmitting ESQ-1 receives an accept message, it will then transmit the sequence data dump.

NOTE: Sequence dumps should not be sent to an ESQ-1 without first transmitting a sequence dump alert message and then waiting for the response.

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

2.3.1 All Sequence Dump Alert Packet

This message is transmitted by the sending ESQ-1 to inform the receiving unit that it wishes to dump the entire sequencer memory.

xxxxxxx	ESQ System Exclusive Header
0000011	All Sequence Dump Alert code
0000lll	Low byte (in nybbles) of sequence size
0000lll	Low byte (in nybbles) of sequence size
0000hhhh	High byte (in nybbles) of sequence size
0000hhhh	High byte (in nybbles) of sequence size
11110111	End of exclusive

2.3.2 One Sequence Dump Alert Packet

Transmitted by the sending ESQ-1 to inform the receiving unit that it wishes to dump the currently selected single sequence.

xxxxxxx	ESQ System Exclusive Header
0000011	One Sequence Dump Alert code
0000lll	Low byte (in nybbles) of sequence size
0000lll	Low byte (in nybbles) of sequence size
0000hhhh	High byte of sequence size
0000hhhh	High byte of sequence size
11110111	End of exclusive

2.3.3 Accept Message

Transmitted by the receiving ESQ-1 to indicate that it will accept a sequence dump.

xxxxxxx	ESQ System Exclusive Header
00000100	Sequence Accept code
11110111	End of exclusive

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

2.3.4. Reject Message

Transmitted by the receiving ESQ-1 to indicate that it does not have sufficient memory to accept the dump from the sending ESQ-1

xxxxxxx	ESQ System Exclusive Header
00000101	Sequence Reject code
11110111	End of exclusive

2.3.5 No Free Sequence Message

Transmitted by the receiving ESQ-1 in response to a One Sequence Dump Alert Packet (2.3.2) to indicate that it does not have any empty sequence locations in which to place the incoming sequence.

xxxxxxx	ESQ System Exclusive Header
00001101	No free sequence reject code
11110111	End of exclusive

2.3.6 All Sequence Dump Packet

This packet contains the sequence data. The data block consists of 132H bytes of track and pointer information, followed by the number of bytes of sequence data, as determined by the sequence size specified in the All Sequence Dump Alert packet. (see 2.3.1).

xxxxxxx	ESQ System Exclusive Header
00000110	Sequence Dump code
0000llll 0000hhhh	Data.. variable number of bytes of sequence data l = low nybble, h = high nybble
11110111	End of exclusive

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

2.3.7 One Sequence Dump Packet

This packet contains the data for the current sequence. The packet will contain the number of bytes specified in the one sequence alert packet (see section 2.3.2).

xxxxxxx	ESQ System Exclusive Header
00001000	One sequence Dump code
0000llll 0000hhhh	Data.. variable number of bytes of sequence data l = low nybble, h = high nybble
11110111	End of exclusive

2.4 Request Messages

The following are messages which can be sent to an ESQ-1 to initiate program or sequence dumps.

2.4.1 Current Program Dump Request

This request asks for a dump of the currently selected program. The ESQ-1 responds with a Single Program Dump Packet (2.2.1).

xxxxxxx	ESQ System Exclusive Header
00001001	Program Dump Request code
11110111	End of exclusive

2.4.2 All Program Dump Request

This request asks the ESQ-1 to dump all 40 of its internal programs. The ESQ-1 responds with an All Program Dump Packet (2.2.2).

xxxxxxx	ESQ System Exclusive Header
00001010	All Program Dump Request code
11110111	End of exclusive

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

2.4.3 All Sequence Dump Request

This request asks the ESQ-1 to dump all sequencer data. The ESQ-1 responds with a Sequence Dump Alert Packet (2.3.1). The requesting unit should then respond with an accept or reject packet as described in section 2.3.1

xxxxxxx	ESQ System Exclusive Header
00001011	All Sequence Dump Request code
11110111	End of exclusive

2.4.4 One Sequence Dump Request

This request asks the ESQ-1 to dump its currently selected sequence. The ESQ-1 Responds with an One Sequence Dump Alert Packet (2.3.2).

xxxxxxx	ESQ System Exclusive Header
00001100	One Sequence Dump Request code
11110111	End of exclusive

2.5 Received Virtual Keypad Events

This system exclusive message allows an external device to simulate the pressing of the ESQ-1's front panel buttons. The format of the message is an ESQ System Exclusive Header, followed by the Keypad Command Code, and then a stream of button down and button up codes which is terminated by an End of Exclusive.

NOTE: Each Button Down keypad event should be followed by a Button Up event for the same button to prevent the inbound keypad event processor from becoming "hung up" while waiting for a button to be released. This should usually be done within one system exclusive message. It should also be possible to follow up with separate messages, but be careful not to leave dangling button downs !

xxxxxxx	ESQ System Exclusive header
00001110	Keypad Command code
	(Data stream...)

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

0nnnnnnn Any number of keypad events (button down/up codes)
 One button down or button up event per byte.
 (button codes are specified in the table below)

11110111 End of exclusive

Button Codes				<u>Front Panel Button Name</u>
Down		Up		
<u>Dec</u>	<u>Hex</u>	<u>Dec</u>	<u>Hex</u>	
01	01	52	34	ENV1
02	02	53	35	ENV2
03	03	54	36	ENV3
04	04	55	37	ENV4
05	05	56	38	LFO1
06	06	57	39	LFO2
07	07	58	3A	LFO3
08	08	59	3B	OSC1
09	09	60	3C	OSC2
10	0A	61	3D	OSC3
11	0B	62	3E	DCA1
12	0C	63	3F	DCA2
13	0D	64	40	DCA3
14	0E	65	41	DCA4
15	0F	66	42	FILTER
16	10	67	43	MODES
17	11	68	44	SPLIT/LAYER
18	12	69	45	MASTER
19	13	70	46	MIDI
20	14	71	47	CONTROL
21	15	72	48	STORAGE
22	16	73	49	WRITE
23	17	74	4A	COMPARE
24	18	75	4B	INC (up arrow)
25	19	76	4C	DEC (down arrow)
26	1A	77	4D	CREATE
27	1B	78	4E	EDIT
28	1C	79	4F	TRACKS-SELECT
29	1D	80	50	LOCATE
30	1E	81	51	TRACKS-MIX/MIDI
31	1F	82	52	RECORD
32	20	83	53	STOP
33	21	84	54	PLAY
34	22	85	55	BANK 1
35	23	86	56	BANK 2

ESQ-1 MIDI Implementation Specifications (Software v. 2.0)

Button Codes				<u>Front Panel Button Name</u>
Down		Up		
<u>Dec</u>	<u>Hex</u>	<u>Dec</u>	<u>Hex</u>	
36	24	87	57	BANK 3
37	25	88	58	BANK 4
38	26	89	59	INTERNAL
39	27	90	5A	CART A
40	28	91	5B	CART B
41	29	92	5C	SEQuence
42	2A	93	5D	SOFTKEY 0
43	2B	94	5E	SOFTKEY 1
44	2C	95	5F	SOFTKEY 2
45	2D	96	60	SOFTKEY 3
46	2E	97	61	SOFTKEY 4
47	2F	98	62	SOFTKEY 5
48	30	99	63	SOFTKEY 6
49	31	100	64	SOFTKEY 7
50	32	101	65	SOFTKEY 8
51	33	102	66	SOFTKEY 9

As you may have observed, the button up codes are differentiated from the button down codes by a positive offset of 51 decimal or \$33 hex. The Button Code 00 is reserved for illegal key events within the system and should not be sent to the ESQ-1. Also, button codes out of the range specified in the above table should not be sent to the ESQ-1.

2.6 MIDI Song Selects

MIDI Song Selects may be received by the ESQ-1 when the setting of the MIDI Enable parameter is "KEYS+CT+PC+SNGSL" or "KEYS+CT+PC+SS+SX". Inbound MIDI Song Selects are recognized only in sequencer **STOP** or **SNGS** (Song Stop) modes. Song Selects 00 to 19 will select defined songs within that range and put the sequencer into Song Mode. Selects for undefined songs will be ignored. The ESQ-1 will interpret MIDI Song Selects 20 and above as sequence selects, and will map them onto SEQ-1 and above. A Song Select 20, for example, will select SEQ-1 if it is defined, and will then put the sequencer into Sequence Mode.

MIDI Song Selects are transmitted whenever a song or sequence is selected from the SEQ BANK pages by using the softkeys on the front panel (virtual keypad events will also transmit them).

ENSONIQ ESQ-1 MIDI Parameter Number List

<u>Page</u>	<u>Param#</u>		<u>Parameter Name</u>
	<u>Dec</u>	<u>Hex</u>	
ENV1	0	00	ENV1 L1 parameter
	1	01	ENV1 L2 parameter
	2	02	ENV1 L3 parameter
	3	03	ENV1 T1 parameter
	4	04	ENV1 LV parameter
	5	05	ENV1 T1V parameter
	6	06	ENV1 T2 parameter
	7	07	ENV1 T3 parameter
	8	08	ENV1 T4 parameter
	9	09	ENV1 TK parameter
ENV2	10	0A	ENV2 L1 parameter
	11	0B	ENV2 L2 parameter
	12	0C	ENV2 L3 parameter
	13	0D	ENV2 LV parameter
	14	0E	ENV2 T1V parameter
	15	0F	ENV2 T1 parameter
	16	10	ENV2 T2 parameter
	17	11	ENV2 T3 parameter
	18	12	ENV2 T4 parameter
	19	13	ENV2 TK parameter
ENV3	20	14	ENV3 L1 parameter
	21	15	ENV3 L2 parameter
	22	16	ENV3 L3 parameter
	23	17	ENV3 LV parameter
	24	18	ENV3 T1V parameter
	25	19	ENV3 T1 parameter
	26	1A	ENV3 T2 parameter
	27	1B	ENV3 T3 parameter
	28	1C	ENV3 T4 parameter
	29	1D	ENV3 TK parameter
ENV4	30	1E	ENV4 L1 parameter
	31	1F	ENV4 L2 parameter
	32	20	ENV4 L3 parameter
	33	21	ENV4 LV parameter
	34	22	ENV4 T1V parameter

ENSONIQ ESQ-1 MIDI Parameter Number List

Page	Param#		Parameter Name
	Dec	Hex	
	35	23	ENV4 T1 parameter
	36	24	ENV4 T2 parameter
	37	25	ENV4 T3 parameter
	38	26	ENV4 T4 parameter
	39	27	ENV4 TK parameter
LFO1			
	40	28	LFO1 frequency parameter
	41	29	LFO1 reset parameter
	42	2A	LFO1 humanize switch parameter
	43	2B	LFO1 modulation waveform parameter
	44	2C	LFO1 L1 parameter
	45	2D	LFO1 delay parameter
	46	2E	LFO1 L2 parameter
	47	2F	LFO1 modulation source parameter
LFO2			
	48	30	LFO2 frequency parameter
	49	31	LFO2 reset parameter
	50	32	LFO2 humanize switch parameter
	51	33	LFO2 modulation waveform parameter
	52	34	LFO2 L1 parameter
	53	35	LFO2 delay parameter
	54	36	LFO2 L2 parameter
	55	37	LFO2 modulation source parameter
LFO3			
	56	38	LFO3 frequency parameter
	57	39	LFO3 reset parameter
	58	3A	LFO3 humanize switch parameter
	59	3B	LFO3 modulation waveform parameter
	60	3C	LFO3 L1 parameter
	61	3D	LFO3 delay parameter
	62	3E	LFO3 L2 parameter
	63	3F	LFO3 modulation source parameter
OSC1			
	64	40	OSC1 octave parameter
	65	41	OSC1 semitone parameter
	66	42	OSC1 finetune parameter
	67	43	OSC1 waveform parameter
	68	44	OSC1 modulation source 1 parameter

ENSONIQ ESQ-1 MIDI Parameter Number List

Page	Param#		Parameter Name
	Dec	Hex	
	69	45	OSC1 modulation amount 1 parameter
	70	46	OSC1 modulation source 2 parameter
	71	47	OSC1 modulation amount 2 parameter
OSC2			
	72	48	OSC2 octave parameter
	73	49	OSC2 semitone parameter
	74	4A	OSC2 finetune parameter
	75	4B	OSC2 waveform parameter
	76	4C	OSC2 modulation source 1 parameter
	77	4D	OSC2 modulation amount 1 parameter
	78	4E	OSC2 modulation source 2 parameter
	79	4F	OSC2 modulation amount 2 parameter
OSC3			
	80	50	OSC3 octave parameter
	81	51	OSC3 semitone parameter
	82	52	OSC3 finetune parameter
	83	53	OSC3 waveform parameter
	84	54	OSC3 modulation source 1 parameter
	85	55	OSC3 modulation amount 1 parameter
	86	56	OSC3 modulation source 2 parameter
	87	57	OSC3 modulation amount 2 parameter
DCA1			
	88	58	DCA1 level parameter
	89	59	DCA1 output enable parameter
	90	5A	DCA1 modulation source 1 parameter
	91	5B	DCA1 modulation amount 1 parameter
	92	5C	DCA1 modulation source 2 parameter
	93	5D	DCA1 modulation amount 2 parameter
DCA2			
	94	5E	DCA2 level parameter
	95	5F	DCA2 output enable parameter
	96	60	DCA2 modulation source 1 parameter
	97	61	DCA2 modulation amount 1 parameter
	98	62	DCA2 modulation source 2 parameter
	99	63	DCA2 modulation amount 2 parameter

ENSONIQ ESQ-1 MIDI Parameter Number List

<u>Page</u>	<u>Param#</u>		<u>Parameter Name</u>
	<u>Dec</u>	<u>Hex</u>	
DCA3			
	100	64	DCA3 level parameter
	101	65	DCA3 output enable parameter
	102	66	DCA3 modulation source 1 parameter
	103	67	DCA3 modulation amount 1 parameter
	104	68	DCA3 modulation source 2 parameter
	105	69	DCA3 modulation amount 2 parameter
DCA4			
	106	6A	DCA4 modamt parameter
	107	6B	PAN position parameter
	108	6C	PAN modulation source parameter
	109	6D	PAN modulation amount parameter
FILTER			
	110	6E	FILTER Fc (cutoff) parameter
	111	6F	FILTER Q (resonance) parameter
	112	70	FILTER modulation amount 3 parameter
	113	71	FILTER modulation source 1 parameter
	114	72	FILTER modulation amount 1 parameter
	115	73	FILTER modulation source 2 parameter
	116	74	FILTER modulation amount 2 parameter
MODES			
	117	75	MODES AM switch parameter
	118	76	MODES glide parameter
	119	77	MODES mono switch parameter
	120	78	MODES sync switch parameter
	121	79	MODES rotate switch parameter
	122	7A	MODES envelope reset switch parameter
	123	7B	MODES wave reset switch parameter
	124	7C	MODES cycle switch parameter
SPLIT/LAYER			
	125	7D	S/L layer switch parameter
	126	7E	S/L layer program parameter
	127	7F	S/L split layer switch parameter
	128	80	S/L split layer program parameter
	129	81	S/L split direction parameter
	130	82	S/L split program parameter
	131	83	S/L split point parameter

ENSONIQ ESQ-1 MIDI Parameter Number List

<u>Page</u>	<u>Param#</u>		<u>Parameter Name</u>
	<u>Dec</u>	<u>Hex</u>	

* the following parameter numbers (132-143) are used for the non-pcb system parameters

System parameters:

MASTER

132	84	MASTER tuning parameter
133	85	MASTER velocity parameter
134	86	MASTER chorus switch parameter
135	87	MASTER pitch bend range parameter
136	88	MASTER pitch bend mode parameter

MIDI

137	89	MIDI base channel parameter
138	8A	MIDI overflow switch parameter
139	8B	MIDI xcontrol parameter
140	8C	MIDI pressure parameter
141	8D	MIDI mode parameter
142	8E	MIDI output enable parameter

CONTROL

143	8F	CONTROL metronome rate parameter
144	90	CONTROL sync source parameter
145	91	CONTROL click switch parameter
146	92	CONTROL countoff parameter
147	93	CONTROL seqencer loop switch parameter

**** **Note:** The above numbers are the numbers that are sent in the Parameter Select controllers (MIDI Controller #'s 98 and 99).

MODEL: ESQ 1 MIDI Implementation Chart

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Channel	1 1 - 16	1 1 - 16	
Mode	Default Messages Altered	Memorized	Memorized OMNI On/Off, MONO On OMNI Off > MULTI	Global Controllers in MIDI Mono Mode
Note Number	True Voice	21 - 108	21 - 108	
Velocity	Note ON Note OFF	<input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/>	
After Touch	Key's Ch's	<input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/>	Transmitted only if recorded
Pitch Bender		<input type="radio"/>	<input type="radio"/>	
Control Change		1 - 95 1 Mod Wheel 2 Breath 4 Foot Pedal 6 Data Entry 7 Volume 96 Inc. Arrow 97 Dec. Arrow 98 Param. Select Low 99 Param. Select High	1 - 95 1 Mod Wheel 2 Breath 4 Foot Pedal 6 Data Entry 7 Volume 96 Inc. Arrow 97 Dec. Arrow 98 Param. Select Low 99 Param. Select High	Programmable
Prog Change	True #	0 - 119	0 - 119	
System Exclusive		<input type="radio"/>	<input type="radio"/>	
System Common	: Song Pos : Song Sel : Tune	<input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	<input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	
System Real Time	: Clock : Commands	<input type="radio"/> Clock <input type="radio"/> Start, Stop, Cont	<input type="radio"/> Clock <input type="radio"/> Start, Stop, Cont	
Aux Messages	: Local ON/Off : All Notes Off : Active Sense : Reset	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Only Mode Change
Notes				

Mode 1: OMNI ON, POLY
Mode 3: OMNI OFF, POLY

Mode 2: OMNI ON, MONO
Mode 4: OMNI OFF, MONO

: Yes
 : No

ESQ1 PROGRAM SHEET

PROGRAM: _____

	OCT=	SEMI=	FINE=	WAVE=	MOD#1	DEPTH	MOD#2	DEPTH
OSC 1								
OSC 2								
OSC 3								

	LEVEL=	OUTPUT=	MOD#1	DEPTH	MOD#2	DEPTH
DCA 1		On Off				
DCA 2		On Off				
DCA 3		On Off				

	FREQ=	Q=	KEYBD=	MOD#1	DEPTH	MOD#2	DEPTH
Filter							

	Final Vol.(ENV 4)	PAN=	PAN MODULATOR	DEPTH
DCA 4				

	FREQ=	RESET=	HUMAN=	WAY=	L1=	DELAY=	L2=	MOD=
LFO 1		On Off	On Off					
LFO 2		On Off	On Off					
LFO 3		On Off	On Off					

	L1=	L2=	L3=	LV=	T1V=	T1=	T2=	T3=	T4=	TK=
ENV 1										
ENV 2										
ENV 3										
ENV 4										

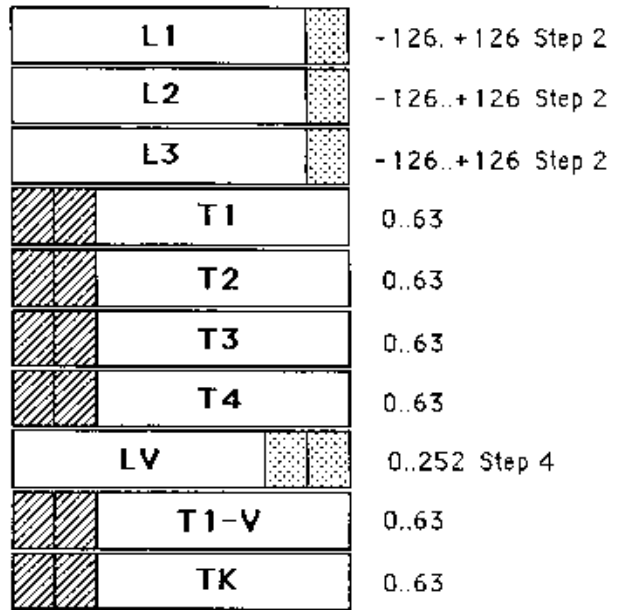
	SYNC=	AM=	MONO=	GLIDE=	VC=	ENV=	OSC=	CYC=
Modes	On Off	On Off	On Off		On Off	On Off	On Off	On Off

	Split/Layer=	Split/Layer Program	Layer=	Layer Program	Split=	Split Program	Split Key=
Split/Layer	On Off		On Off		Off Lower Upper		

PCB Structure, Part One

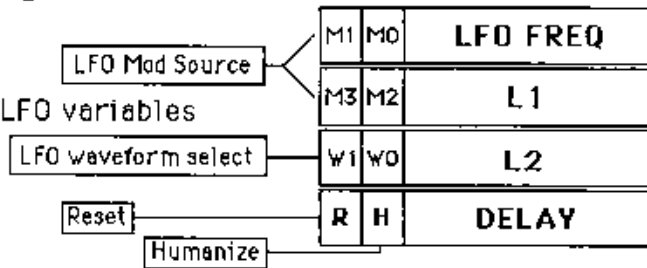
Envelopes

Four sets of envelope variables



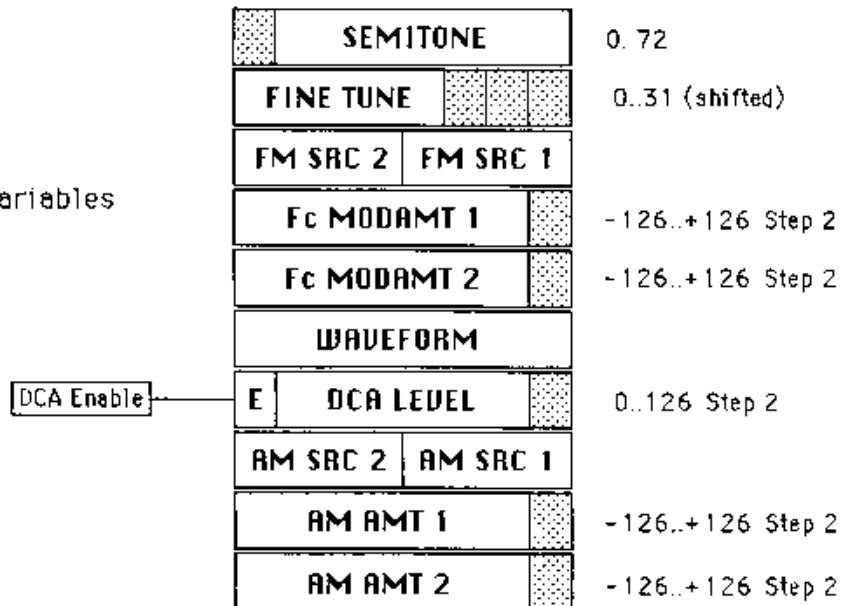
Low Frequency Oscillators

Three sets of LFO variables



Oscillators

Three sets of OSC variables



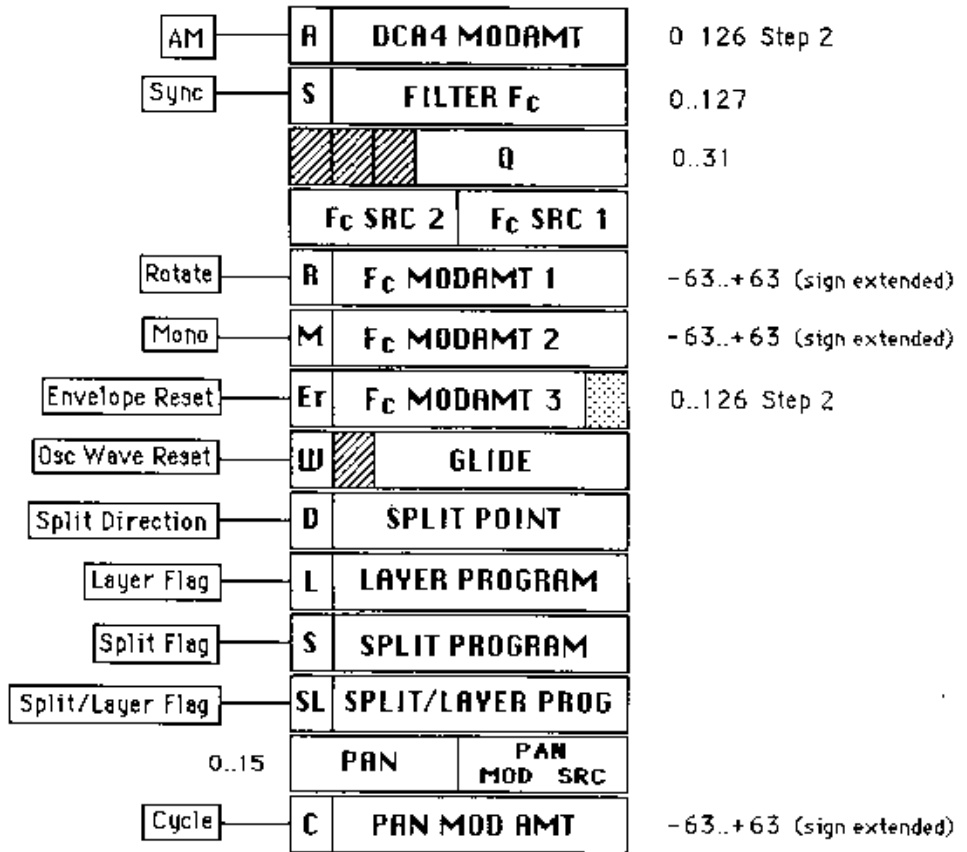
PCB Structure, Part Two

Miscellaneous

DCA 4

Filter

Keyboard and Voice Control



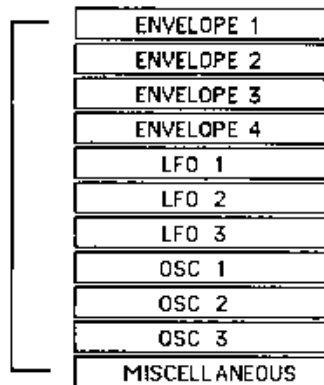
Available



Unavailable

Complete PCB Structure

102 Bytes Total



ESQ1 TRACK SHEET

SEQ #	<input type="checkbox"/> Template
STORED:	<input type="checkbox"/> Recorded Seq.

TIME SIG=	TEMPO=	SYNC=	LOOP = <input type="checkbox"/> On <input type="checkbox"/> Off
-----------	--------	-------	--

Tracks Select	Tracks Mix/Midi				Receiving Instrument		
	Program	Status	Prog. Num.	Mix	MIDI Chan	Name	Special Notes
Track 1							
Track 2							
Track 3							
Track 4							
Track 5							
Track 6							
Track 7							
Track 8							

Other Notes: