



E-SYSMIDI-0	Free System Blocks
E-SYSMIDI-1	Master Tune
E-SYSMIDI-2	Pedal
E-SYSMIDI-3	Auto-Loop Finding
E-SYSMIDI-5	MIDI Base Channel
E-SYSMIDI-6	Transmit On
E-SYSMIDI-7	MIDI In Mode
E-SYSMIDI-8	MIDI Prog Change
E-SYSMIDI-9	MIDI XCTRL Number

C-SYSMIDI-0	Format Floppy Disk
C-SYSMIDI-1	Copy O.S. to Disk
C-SYSMIDI-2	Save Global Parameters
C-SYSMIDI-3	Load Global Parameters
C-SYSMIDI-4	Create Directory
C-SYSMIDI-5	Change Storage Device
C-SYSMIDI-6	Save Macro File
C-SYSMIDI-7	Copy Floppy Disk
C-SYSMIDI-9	MIDI Sys-Ex Recorder

E-SEQSONG-0	Current Sequence/Song
E-SEQSONG-1	Bar
E-SEQSONG-2	Tempo
E-SEQSONG-3	Loop
E-SEQSONG-4	Clock Source
E-SEQSONG-5	Click, Click Note Value
E-SEQSONG-6	Click Volume
E-SEQSONG-7	Click Pan, Output
E-SEQSONG-8	Sequence Countoff
E-SEQSONG-9	Sequence Record Mode

C-SEQSONG-0	Create New Sequence
C-SEQSONG-1	Copy Sequence
C-SEQSONG-2	Delete Sequence
C-SEQSONG-3	Save Current Sequence
C-SEQSONG-4	Save Song and all Seqs
C-SEQSONG-5	Rename Song/Sequence
C-SEQSONG-6	Sequencer Information
C-SEQSONG-7	Erase Song and all Seqs
C-SEQSONG-8	Append Sequence
C-SEQSONG-9	Change Seq Length

LFO FREQUENCIES/RATES

val	rate (Hz)	8th (bpm)	16th (bpm)	val	rate (Hz)	8th (bpm)	16th (bpm)
0	0.05			43	7.00		105
5	0.07			44	7.25		108.75
10	0.10			45	7.50		112.15
15	0.20			46	7.75		116.25
20	1.25			47	8.00		120
25	2.50	75		48	8.25		123.75
26	2.75	82.5		49	8.50		127.5
27	3.00	90		50	8.75		131.25
28	3.25	97.5		51	9.00		135
29	3.50	105		52	9.25		138.75
30	3.75	112.5		53	9.50		142.5
31	4.00	120		54	9.75		146.25
32	4.25	127.5		55	10.00		150
33	4.50	135		60	11.25		
34	4.75	142.5		65	12.50		
35	5.00	150	75	70	13.75		
36	5.25		78.75	75	15.00		
37	5.50		82.5	80	16.25		
38	5.75		86.25	85	17.50		
39	6.00		90	90	18.75		
40	6.25		93.75	95	20.00		
41	6.50		97.5	99	21.00		
42	6.75		101.25				

MODULATION SOURCES

LFO - Low Frequency Oscillator
 NOISE - Noise Generator
 ENV 1 - Envelope 1
 ENV 2 - Envelope 2
 PR+VL - Pressure + Velocity
 VEL 1 - Convex Velocity Curve
 VEL - Linear Velocity Curve
 VEL 2 - Concave Velocity Curve
 KBD - Keyboard Tracking
 PITCH - Pitch Bend Wheel
 WHEEL - Modulation Wheel
 PEDAL - Voltage Control Foot Pedal
 XCTRL - External Controller (MIDI)
 PRESS - Pressure (After-touch)
 WL+PR - Mod Wheel + Pressure
 OFF - No Mod Source selected

E-TRACK-0	Sequence Track Status
E-TRACK-1	Mix
E-TRACK-2	Pan
E-TRACK-3	Song Track Status
E-TRACK-4	Output Routing
E-TRACK-5	Effect Mod Control
E-TRACK-6	Multi-In MIDI Channel

C-TRACK-0	Quantize Track
C-TRACK-1	Copy Track
C-TRACK-2	Erase/Undefined Track
C-TRACK-3	Filter Event
C-TRACK-4	Merge Two Tracks
C-TRACK-5	Event Edit Track
C-TRACK-6	Transpose Track
C-TRACK-7	Scale Event
C-TRACK-8	Shift Track By Clocks

E-LFO -1	Wave Rate
E-LFO -3	LFO Depth
E-LFO -4	LFO Delay
E-LFO -5	LFO Mode
E-LFO -7	Depth Modulation, Amt
E-LFO -8	Rate Modulation, Amt

RECOGNIZED EXTERNAL CONTROLLERS

1-Modulation Wheel
 2-Breath Controller
 4-Foot (Pedal) Controller
 6-Data Entry
 7-Volume
 10-Pan
 64-Sustain
 66-Sostenuto
 70-Sound Variations (Patch Selects)
 71-Harmonic Content (Timbre)
 72-Release Time
 73-Attack Time
 74-Brightness

FLOPPY DISK STORAGE

Disk Type	HD	HD	DD	DD
Format	Ensoniq	Computer	Ensoniq	Computer
KB	1600	1440	800	720
Words	800k	720k	400k	360k
Blocks	3176	2863	1585	1426



E-INST-0	Patch
E-INST-1	Keydown Layers
E-INST-2	Keyup Layers
E-INST-3	MIDI Out Channel
E-INST-4	MIDI Out Program
E-INST-5	Pressure Mode
E-INST-6	MIDI Status
E-INST-7	Size (in blocks)
E-INST-8	Inst Name
E-INST-9	Patch Select Mode

C-INST-0	Create New Instrument
C-INST-1	Copy Instrument
C-INST-2	Delete Instrument
C-INST-3	Save Instrument
C-INST-4	Save Bank
C-INST-5	Create Preset
C-INST-6	Delete Inst. Effect

E-LAYER-0	Layer Glidemode
E-LAYER-1	Layer Glidetime
E-LAYER-2	Legato Layer
E-LAYER-3	Layer Velocity Low, High
E-LAYER-4	Pitch Table
E-LAYER-5	Layer Name
E-LAYER-6	Delay
E-LAYER-7	Delay Velocity Amount
E-LAYER-8	Layer Restrike Time
E-LAYER-9	Stereo Layer Link

C-LAYER-0	Create New Layer
C-LAYER-1	Copy Layer
C-LAYER-2	Delete Layer

E-WAVE-0	WS Playback Mode
E-WAVE-1	Sample Start
E-WAVE-2	Sample End
E-WAVE-3	Loop Start
E-WAVE-4	Loop End
E-WAVE-5	Loop Position
E-WAVE-6	Mod Type
E-WAVE-7	Mod Source
E-WAVE-8	Mod Amount
E-WAVE-9	Mod Range

C-WAVE-0	Create New Wavesample
C-WAVE-1	Copy Wavesample
C-WAVE-2	Delete Wavesample
C-WAVE-3	Wavesample Information
C-WAVE-4	Truncate Wavesample
C-WAVE-5	Cross Fade Loop
C-WAVE-6	Reverse Cross Fade
C-WAVE-7	Ensemble Cross Fade
C-WAVE-8	Bowtie Cross Fade Loop
C-WAVE-9	Bidirectional X-Fade

C-AMP -0	Normalize Gain
C-AMP -1	Volume Smoothing
C-AMP -2	Mix Wavesamples
C-AMP -3	Merge Wavesamples
C-AMP -4	Splice Wavesamples
C-AMP -5	Fade In
C-AMP -6	Fade Out

C-LFO -0	Clear Data
C-LFO -1	Copy Data
C-LFO -2	Replicate Data
C-LFO -3	Reverse Data
C-LFO -4	Invert Data
C-LFO -5	Add Data
C-LFO -6	Scale Data

E-PITCH-1	Root Key, Fine
E-PITCH-2	LFO Amount
E-PITCH-3	Env 1 Amount
E-PITCH-5	Noise Rate, Amount
E-PITCH-6	Bend Range
E-PITCH-7	Pitch Modulation, Amt

C-PITCH-0	Edit Pitch Table
C-PITCH-1	Copy Pitch Table
C-PITCH-2	Delete Pitch Table
C-PITCH-3	Extrapolate Pitch Table

E-FILTER-0	Filter Mode
E-FILTER-1	Cutoff F1, F2
E-FILTER-2	Env 2 Amount F1, F2
E-FILTER-3	Keyboard Amount F1, F2
E-FILTER-7	F1 Modulation, Amount
E-FILTER-8	F2 Modulation, Amount

E-AMP -1	WS Volume
E-AMP -2	WS Pan
E-AMP -3	A-B Fade In, To
E-AMP -4	C-D Fade Out, To
E-AMP -5	Fadecurve
E-AMP -6	Boost
E-AMP -7	Volume Modulation, Amt
E-AMP -8	Pan Modulation, Amount
E-AMP -9	Output Routing

E-ENV?-0	Envelope Templates
E-ENV?-1	Hard Velocity Levels
E-ENV?-2	Soft Velocity Levels
E-ENV?-3	Times
E-ENV?-4	2nd Release Time, Level
E-ENV?-5	Attack Time Vel Amt
E-ENV?-6	Keyboard Time Scaling
E-ENV?-7	Soft Velocity Curve
E-ENV?-8	Envelope Mode

ENVELOPE VALUES

value	amplitude (dB)
0	-∞
6	-56
25	-32
50	-16
75	-8
99	0

ENVELOPE TIMES

value	time (in sec)	value	time (in sec)	value	time (in sec)
0	0.00	35	0.58	70	6.5
5	0.06	40	0.82	75	9.3
10	0.10	45	1.1	80	13
15	0.14	50	1.6	85	18
20	0.20	55	2.3	90	26
25	0.29	60	3.2	95	37
30	0.41	65	4.6	99	49



ALPHABETICAL LISTING

2nd Release Time, Level	E-ENV?-4	Envelope Templates	E-ENV?-0	Multi-In MIDI Channel	E-TRACK-6
A-B Fade In, To	E-AMP -3	Erase Song and all Sequences	C-SEQSONG-7	Noise Rate, Amount	E-PITCH-5
Add Data	C-LFO -5	Erase/Undefined Track	C-TRACK-2	Normalize Gain	C-AMP -0
Append Sequence	C-SEQSONG-8	Event Edit Track	C-TRACK-5	Output Routing	E-AMP -9
Attack Time Velocity Amount	E-ENV?-5	Extrapolate Pitch Table	C-PITCH-3	Output Routing	E-TRACK-4
Auto-Loop Finding	E-SYSMIDI-3	F1 Modulation, Amount	E-FILTER-7	Pan	E-TRACK-2
Bar	E-SEQSONG-1	F2 Modulation, Amount	E-FILTER-8	Pan Modulation, Amount	E-AMP -8
Bend Range	E-PITCH-6	Fade In	C-AMP -5	Patch	E-INST-0
Bidirectional X-Fade	C-WAVE-9	Fade Out	C-AMP -6	Patch Select Mode	E-INST-9
Boost	E-AMP -6	Fadecurve	E-AMP -5	Pedal	E-SYSMIDI-2
Bowtie Cross Fade Loop	C-WAVE-8	Filter Event	C-TRACK-3	Pitch Modulation, Amount	E-PITCH-7
C-D Fade Out, To	E-AMP -4	Filter Mode	E-FILTER-0	Pitch Table	E-LAYER-4
Change Sequence Length	C-SEQSONG-9	Format Floppy Disk	C-SYSMIDI-0	Pressure Mode	E-INST-5
Change Storage Device	C-SYSMIDI-5	Free System Blocks	E-SYSMIDI-0	Quantize Track	C-TRACK-0
Clear Data	C-LFO -0	Hard Velocity Levels	E-ENV?-1	Rate Modulation, Amount	E-LFO -8
Click Pan, Output Routing	E-SEQSONG-7	Inst Name	E-INST-8	Rename Song/Sequence	C-SEQSONG-5
Click Volume	E-SEQSONG-6	Invert Data	C-LFO -4	Replicate Data	C-LFO -2
Click, Click Note Value	E-SEQSONG-5	Keyboard Amount F1, F2	E-FILTER-3	Reverse Cross Fade	C-WAVE-6
Clock Source	E-SEQSONG-4	Keyboard Time Scaling	E-ENV?-6	Reverse Data	C-LFO -3
Copy Data	C-LFO -1	Keydown Layers	E-INST-1	Root Key, Fine	E-PITCH-1
Copy Floppy Disk	C-SYSMIDI-7	Keyup Layers	E-INST-2	Sample End	E-WAVE-2
Copy Instrument	C-INST-1	Layer Glidemode	E-LAYER-0	Sample Start	E-WAVE-1
Copy Layer	C-LAYER-1	Layer Glidetime	E-LAYER-1	Save Bank	C-INST-4
Copy O.S. to Disk	C-SYSMIDI-1	Layer Name	E-LAYER-5	Save Current Sequence	C-SEQSONG-3
Copy Pitch Table	C-PITCH-1	Layer Restrike Time	E-LAYER-8	Save Global Parameters	C-SYSMIDI-2
Copy Sequence	C-SEQSONG-1	Layer Velocity Low, High	E-LAYER-3	Save Instrument	C-INST-3
Copy Track	C-TRACK-1	Legato Layer	E-LAYER-2	Save Macro File	C-SYSMIDI-6
Copy Wavesample	C-WAVE-1	LFO Amount	E-PITCH-2	Save Song and all Sequences	C-SEQSONG-4
Create Directory	C-SYSMIDI-4	LFO Delay	E-LFO -4	Scale Data	C-LFO -6
Create New Instrument	C-INST-0	LFO Depth	E-LFO -3	Scale Event	C-TRACK-7
Create New Layer	C-LAYER-0	LFO Mode	E-LFO -5	Sequence Countoff	E-SEQSONG-8
Create New Sequence	C-SEQSONG-0	Load Global Parameters	C-SYSMIDI-3	Sequence Record Mode	E-SEQSONG-9
Create New Wavesample	C-WAVE-0	Loop	E-SEQSONG-3	Sequence Track Status	E-TRACK-0
Create Preset	C-INST-5	Loop End	E-WAVE-4	Sequencer Information	C-SEQSONG-6
Cross Fade Loop	C-WAVE-5	Loop Position	E-WAVE-5	Shift Track By Clocks	C-TRACK-8
Current Sequence/Song	E-SEQSONG-0	Loop Start	E-WAVE-3	Size (in blocks)	E-INST-7
Cutoff F1, F2	E-FILTER-1	Master Tune	E-SYSMIDI-1	Soft Velocity Curve	E-ENV?-7
Delay	E-LAYER-6	Merge Two Tracks	C-TRACK-4	Soft Velocity Levels	E-ENV?-2
Delay Velocity Amount	E-LAYER-7	Merge Wavesamples	C-AMP -3	Song Track Status	E-TRACK-3
Delete Inst. Effect	C-INST-6	MIDI Base Channel	E-SYSMIDI-5	Splice Wavesamples	C-AMP -4
Delete Instrument	C-INST-2	MIDI In Mode	E-SYSMIDI-7	Stereo Layer Link	E-LAYER-9
Delete Layer	C-LAYER-2	MIDI Out Channel	E-INST-3	Tempo	E-SEQSONG-2
Delete Pitch Table	C-PITCH-2	MIDI Out Program	E-INST-4	Times	E-ENV?-3
Delete Sequence	C-SEQSONG-2	MIDI Prog Change	E-SYSMIDI-8	Transmit On	E-SYSMIDI-6
Delete Wavesample	C-WAVE-2	MIDI Status	E-INST-6	Transpose Track	C-TRACK-6
Depth Modulation, Amount	E-LFO -7	MIDI Sys-Ex Recorder	C-SYSMIDI-9	Truncate Wavesample	C-WAVE-4
Edit Pitch Table	C-PITCH-0	MIDI XCTRL Number	E-SYSMIDI-9	Volume Modulation, Amount	E-AMP -7
Effect Modulation Control	E-TRACK-5	Mix	E-TRACK-1	Volume Smoothing	C-AMP -1
Ensemble Cross Fade	C-WAVE-7	Mix Wavesamples	C-AMP -2	Wave Rate	E-LFO -1
Env 1 Amount	E-PITCH-3	Mod Amount	E-WAVE-8	Wavesample Information	C-WAVE-3
Env 2 Amount F1, F2	E-FILTER-2	Mod Range	E-WAVE-9	WS Pan	E-AMP -2
Envelope Mode	E-ENV?-8	Mod Source	E-WAVE-7	WS Playback Mode	E-WAVE-0
		Mod Type	E-WAVE-6	WS Volume	E-AMP -1