

Appendix 1 – TTS-1 / HyperCanvas / Axiom 49 Master MIDI Controller List

00	Bank Select	60	Controller 60		Channel Mode Messages
01	Modulation (33 fine)	61	Controller 61	120	All Sounds Off
02	Breath Control (34 fine)	62	Controller 62	121	Reset All Controllers
03	Master Vol (EDIROLCh1)	63	Controller 63	122	Local Control
04	Foot Control (36 fine)	64	Sustain Pedal (Hold 1)	123	All Notes Off
05	PortamentoTime (37fine)	65	Portamento On/Off	124	Omni Off
06	RPN/NRPN Data (38fine)	66	Sostenuto	125	Omni On
07	Channel Volume (39fine)	67	Soft Pedal	126	Mono On (Poly Off)
08	Stereo Balance (40 fine)	68	Lgto Pdl (EDIROL Patch&Bank dec)	127	Poly On (Mono Off)
09	Controller 9	69	Hold 2 (EDIROL Patch&Bank inc)		Axiom Linear/Common Virtual Msgs (incl. Aftertouch, wheels, pedals)
10	Pan (42 fine)	70	Sound Variation (Sound Controller 1)		
11	Expression (43 fine)	71	Filter Resonance (GM2)	128	Pitch Bend Range (RPN)
12	FX Controller 1 (44 fine)	72	Env Release (GM2)	129	Ch Fine Tune (RPN)
13	FX Controller 2 (45 fine)	73	Env Attack (GM2)	130	Ch Coarse Tune (RPN) (see note)
14	Controller 14	74	Filter Cutoff (GM2)	131	Channel Pressure (mono aftertouch)
15	Controller 15	75	Env Decay Time (GM2)	132	RPN coarse
16	Coarse Tuning (EDIROL)	76	Vibrato Rate (GM2)	133	RPN fine
17	Fine Tuning (EDIROL)	77	Vibrato Depth (GM2)	134	NRPN coarse
18	Character (EDIROL)	78	Vibrato Delay (GM2)	135	NRPN fine
19	Gen Purpose 4 (51 fine)	79	Sound Controller 10	136	Master Vol GM (SysEx)
20	Controller 20	80	Mono/Poly (EDIROL)	137	Master Pan GM (SysEx)
21	Controller 21	81	Gen Purpose 6	138	Master Coarse Tune GM (SysEx)
22	Controller 22	82	Gen Purpose 7	139	Master Fine Tune GM (SysEx)
23	Mod Depth (EDIROL)	83	Gen Purpose 8	140	Chorus Mod Rate GM2 (SysEx)
24	Controller 24	84	Portamento Control (Source Note)	141	Chorus Mod Depth GM2 (SysEx)
25	Controller 25	85	Controller 85	142	Feedback GM2 (SysEx)
26	Bend Range (EDIROL)	86	Controller 86	143	Send To Reverb GM2 (SysEx)
27	EQ Switch (EDIROL)	87	Controller 87	144	Pitch Bend
28	EQ Low (EDIROL)	88	Controller 88	255	Axiom Ctrl Disable (-1:hit minus key)
29	EQ Mid (EDIROL)	89	Controller 89		Additional Rotary Virtual Msgs
30	EQ High (EDIROL)	90	Controller 90		
31	Controller 31	91	Reverb Send	145	Pgm Chg Inc/Dec (data2 to data3)
32	Bank Select LSB[00]	92	Tremolo Depth	146	2's comp from 64/Relative inc/dec
33	Modulation LSB [01]	93	Chorus Send	147	2's comp from 0 / Relative inc/dec
34	Breath Control LSB [02]	94	Celeste (Detune)	148	SgnMag / Rel (signed bit) inc/dec
35	Controller 35	95	Phaser Depth	149	SgnMag / Rel (signed bit 2) inc/dec
36	Foot Control LSB [04]	96	RPN/NRPN Data Increment	150	Single Value Inc/Dec
37	PortamentoTime LSB[05]	97	RPN/NRPN Data Decrement	151	RPN Inc/Dec
38	RPN/NRPN DataLSB[06]	98	NRPN Param LSB	152	NRPN Inc/Dec
39	Channel Volume LSB[07]	99	NRPN Param MSB		Additional NLC Button, Sustain Pedal & Pressure Pad Virtual Msgs
40	Stereo Balance LSB[08]	100	RPN Param LSB		
41	Controller 41	101	RPN Param MSB	145	Program Change (& Bank, if button)
42	Pan LSB [10]	102	Controller 102	146	MIDI CC (press/release alternating)
43	Expression LSB [11]	103	Controller 103	147	Note (Kybd style:press,hold,release)
44	FX Controller 1 LSB[12]	104	Controller 104	148	Note (Loop style:Tap On, Tap Off)
45	FX Controller 2 LSB[13]	105	Controller 105	149	MMC Command (SysEx)
46	Controller 46	106	Controller 106	150	Reverb Type (GM2) 0=Small Room, 1=Med Rm, 2=Lg Rm, 3=Med Hall, 4=Large Hall, 5=Plate
47	Controller 47	107	Controller 107		
48	Gen Purpose 1 LSB[16]	108	Controller 108		
49	Gen Purpose 2 LSB[17]	109	Controller 109	151	Reverb Time (GM2)
50	Gen Purpose 3 LSB[18]	110	Controller 110	152	Chorus type (GM2) 0=Chorus1,1= Chorus2, 2=Chorus3, 3=Chorus4, 4=FBChorus,5= Flanger
51	Gen Purpose 4 LSB[19]	111	Controller 111		
52	Controller 52	112	Controller 112		
53	Controller 53	113	Controller 113	153	MIDI CC Dec (data 3 to data2)
54	Controller 54	114	Controller 114	154	MIDI CC Inc (data2 to data3)
55	Controller 55	115	Controller 115	155	Program Decrement (data3 to data2)
56	Controller 56	116	Controller 116	156	Program Increment (data2 to data3)
57	Controller 57	117	Controller 117		
58	Controller 58	118	Controller 118		(Note: RPN 00H 05H, Mod Depth Range, does not have a dedicated AXIOM virtual controller but should)
59	Controller 59	119	Controller 119		

Red = GM1 Commands supported by TTS-1 and HyperCanvas

Green = GM2 Commands supported by TTS-1 and HyperCanvas

Blue = TTS-1/HyperCanvas "Normal Map" control change map preset additions

Black = Unrecognized or user-programmable controller

Purple = Application-specific Axiom rotary control method

Appendix 2 – GM2 Instrument List

Patch	Bank 0	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5
0	Piano 1	Piano 1 st.	Piano 1d			
1	Piano 2	Piano 2 st.				
2	Piano 3	Piano 3 w				
3	Honky-tonk	Honky-tonk w				
4	E.Piano 1	Detuned EP1	E.Piano 1 v	60's E.Piano		
5	E.Piano 2	Detuned EP2	E.Piano 2v	EP Legend	EP Phase	
6	Harpsichord	Coupl hps.	Harpsi.w	Harpsi.o		
7	Clav.	Pulse Clav				
8	Celesta					
9	Glockenspiel					
10	Music Box					
11	Vibraphone	Vibraphone w				
12	Marimba	Marimba w				
13	Xylophone					
14	Tubular-bell	Church Bell	Carillon			
15	Santur					
16	Organ 1	Detuned Or.1	Organ 60	Organ 4		
17	Organ 2	DetuneOr.2	Organ 5			
18	Organ 3					
19	Church 1	Church 2	Church 3			
20	Reed Organ	Puff Org.				
21	Accordion F	Accordion I				
22	Harmonica					
23	Bandneon					
24	Nylon Gt.	Ukulele	Nylon o	Nylon Gt.2		
25	Steel-str.Gt	12-Str.Gt	Mandolin	Steel+Body		
26	Jazz Gt.	Pedal Steel				
27	Clean Gt	Clean Harf	Mid Tone Gt.			
28	Muted Gt.	Funk Gt.	Funk Gt. 2	Jazz Man		
29	Overdrive Gt	Gt.Pinch				
30	DistortionGt	Feedback Gt.	DistRythm Gt			
31	Gt.Harmonics	Gt.Feedback				
32	Acoustic Bs.					
33	Fingered Bs.	FingerJ.Bass				
34	Picked Bass					
35	Fretless Bs.					
36	Slap Bass 1					
37	Slap Bass 2					
38	Synth Bass 1	SynthBass101	Acid Bass	Clavi Bass	Hammer	
39	Synth Bass 2	Beef FM Bs	Rubber Bass	Attack Pulse		
40	Violin	Slow Violin				
41	Viola					
42	Cello					
43	Contrabass					
44	Tremolo Str					
45	PizzicatoStr					
46	Harp	Yangqin				
47	Timpani					
48	Strings	Orchestra	60'Strings			
49	Slow Strings					
50	Syn.Strings1	Syn.Strings3				
51	Syn.Strings2					
52	Choir Aahs	Choir Aahs 2				
53	Voice Oohs	Hamming				
54	SynVox	Ana Voice				
55	Orchestrahit	Bass Hit	6th Hit	Euro Hit		
56	Trumpet	Dark Trumpet				
57	Trombone	Trombone 2	Brite Bone			
58	Tuba					
59	Mt Trumpet	Mt Trumpet2				
60	French Horns	Fr.Horn				
61	Brass 1	Brass 2				
62	SynthBrass 1	SynthBrass 3	Oct.SynBrass	Jump Brass		
63	SynthBrass 2	SynthBrass 4	Velo Brass			
64	Soprano Sax					
65	Alto Sax					

Patch	Bank 0	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5
66	Tenor Sax					
67	Bariton Sax					
68	Oboe					
69	EnglishHorn					
70	Bassoon					
71	Clarinet					
72	Piccolo					
73	Flute					
74	Recorder					
75	Pan Flute					
76	Bottle Blow					
77	Shakuhachi					
78	Whistle					
79	Ocarina					
80	Square Wave	Square	Sine Wave			
81	Saw Wave	Saw	Doctor Solo	Natural Lead	SequencedSaw	
82	Syn.Calliope					
83	Chiffer Lead					
84	Charang	Wire Lead				
85	Solo Vox					
86	5th SawWave					
87	Bass & Lead	DelayedLead				
88	Fantasia					
89	Warm Pad	Sine Pad				
90	Polysynth					
91	SpaceVoice	Itopia				
92	BowedGlass					
93	Metal Pad					
94	Halo Pad					
95	Sweep Pad					
96	Ice Rain					
97	Soundtrack					
98	Crystal	Syn Mallet				
99	Atmosphere					
100	Brightness					
101	Goblin					
102	Echo Drops	Echo Bell	Echo Pan			
103	Star Theme					
104	Sitar	Sitar 2				
105	Banjo					
106	Shamisen					
107	Koto	Taisho Koto				
108	Kalimba					
109	Bag Pipe					
110	Fiddle					
111	Shanai					
112	Tinkle Bell					
113	Agogo					
114	Steel Drums					
115	Woodblock	Castanet				
116	Taiko	Concert BD				
117	Melo. Tom 1	Melo. Tom 2				
118	Synth Drum	808 tom	Elec Perc			
119	Reverse Cym.					
120	GtFret Noise	Gt.Cut Noise	Slap_St.Bass			
121	Breath Noise	Fl.Key Click				
122	Seashore	Rain	Thunder Wind	Stream	Bubble	
123	Bird Tweet	Dog	Horse Gallop	Bird Tweet 2		
124	Telephone	Telephone 2	Door Creak	Door	Scratch	Wind Chimes
125	Helicopter	Car-Engine	Car-Stop	Car-Pass	Car-Crash	Siren
***	---	---	---	6=Train	7=Jetplane	8=Starship
126	Applause	Laughing	Screaming	Punch	Heart Beat	Footsteps
127	Gunshot	Machine Gun	Lasergun	Explosion		
GM2 Rhythm Tone List						
	1 Standard Set	9 Room Set	17 Power Set	25 Electric Set	26 Analog Set	33 Jazz Set
	41 Brush Set	49 OrchestraSet	57 SFX Set			

Appendix 3 – TTS-1 / HyperCanvas Misc Controllers

TTS-1/Hyper Canvas RPN's (see help for details)

00H 00H: Pitch Bend Range (Sensitivity)
00H 01H: Master Fine Tuning
00H 02H: Master Coarse Tuning
00H 05H: Modulation Depth Range
7FH 7FH: RPN Null

TTS-1/Hyper Canvas NRPN's (See help for details)

18H rrH: Pitch coarse of rhythm instrument
19H rrH: Pitch fine of rhythm instrument
1AH rrH: Rhythm instrument level
1CH rrH: Panpot of rhythm instrument
1DH rrH: Reverb send of rhythm instrument
1EH rrH: Chorus send of rhythm instrument
58H 01H: Character
58H 20H: Tone control On/Off
58H 22H: Tone control bass gain
58H 24H: Tone control treble gain
58H 27H: Tone control mid gain
58H 30H-3BH: Scale tune C-B
58H 40H: Reverb switch
58H 41H: Reverb type
58H 42H: Reverb time
58H 50H: Chorus switch
58H 51H: Chorus type
58H 52H: Chorus rate
58H 53H: Chorus depth
58H 54H: Chorus feedback
58H 55H: Chorus send to reverb
58H 70H: Master volume
58H 71H: Master tuning
58H 72H: Master key shift
58H 7FH: System reset

TTS-1/Hyper Canvas Recognized SysEx Messages (see help for details)

GM1 System On
GM2 System On
Scale/Octave Tuning Adjust
Master Volume
Master Fine Tuning
Master Coarse Tuning
Reverb Parameters
Chorus Parameters
Channel Pressure
Controller
Key-Based Instrument Controllers

Appendix 4 – Line 6 GearBox MIDI Controller List

Foot Controllers

- CC 4: **Wah Position**
- CC 7: **Volume Pedal** (Pre mode=just after gate, Post mode=last item in Send 1-2)
- CC 46: Volume Pedal Minimum
- CC 79: **Stomp Param 2 (Bender)**

Amp Models

- CC 66: Amp Bank Select
- CC 12: **Amp Model Select**
- CC 13: Amp Model Drive
- CC 14: Amp Model Bass
- CC 15: Amp Model Mid
- CC 16: Amp Model Treble
- CC 17: Amp Channel Volume (if “CLIP” lights up, reduce this – it appears to be post-overdrive)
- CC 21: Amp Model Presence
- CC 105: Amp Bypass Channel Volume (no GUI)
- CC 111: Amp Bypass Engage (no GUI, also turns off all AIR, ignored when loading a tone)

A.I.R.

- CC 67: A.I.R. Cab Bank Select
- CC 71: **A.I.R. Cab Select**
- CC 70: A.I.R. Mic Model Select
- CC 76: A.I.R. Room/Early Reflection Level

FX Enables

- CC 22: Noise Gate Enable
- CC 25: Stomp Enable
- CC 26: Compressor Enable
- CC 28: Delay Enable
- CC 36: Reverb Enable
- CC 43: Wah Enable
- CC 50: Mod Enable
- CC 63: EQ Enable

FX Models

- CC 37: Reverb Model Select
- CC 50: Mod Model Select
- CC 75: Stomp Model Select
- CC 88: Delay Model Select

FX Order (note: FX running in “pre” sum to mono, like a stompbox)

- CC 41: Reverb Pre/Post
- CC 47: Volume Pedal Pre/Post
- CC 57: Mod Pre/Post
- CC 74: Stomp Pre/Post (no GUI pre=just after wah, post=just before Post Vol pedal)
- CC 87: Delay Pre/Post

Appendix 5 – M-Audio AXIOM 49 GM Preset 1 Breakdown

M-AUDIO AXIOM 49 PATCH 1 (GM Preset)			
NAME	CTRL	RANGE	WIDGET ID
GROUP D SLIDERS			
D9	74/GM2 Filter Cutoff	0-127	9
D10	71/GM2 Filter Res	0-127	10
D11	91/Reverb Send	0-127	11
D12	93/Chorus Send	0-127	12
D13	73/GM2 Env Attack	0-127	13
D14	72/GM2 Env Release	0-127	14
D15	5/Portamento Time	0-127	15
D16	84/Portamento Note	0-127	16
D17	7/Channel Volume	0-127	17
GROUP D BUTTONS (BANK & PATCH)			
D37 / Z1	145/Patch Change	0	37
D38 / Z2	145/Patch Change	1	38
D39 / Z3	145/Patch Change	2	39
D40 / Z4	145/Patch Change	3	40
D41 / G1	145/Patch Change	4	41
D42 / G2	145/Patch Change	5	42
D43 / G3	145/Patch Change	6	43
D44 / G4	145/Patch Change	7	44
D37	145/Patch Change	8	45
GROUP B ROTARIES			
B1	10/Pan	0-127	1
B2	2/Breath	0-127	2
B3	12/FX 1	0-127	3
B4	13/FX 2	0-127	4
B5	75/Env Decay	0-127	5
B6	76/Vibrato Rate	0-127	6
B7	92/Trem Depth	0-127	7
B8	95/Phaser Depth	0-127	8
GROUP B BUTTONS (MIN/MAX TOGGLE)			
B31 / LOOP	20/Generic	127-127	31
B32 / REW	21/Generic	127-127	32
B33 / FF	22/Generic	127-127	33
B34 / STOP	23/HC Mod Depth	127-127	34
B35 / PLAY	24/Generic	127-127	35
B36 / REC	25/Generic	127-127	36
GROUP C PADS			
C23	147/NOTE	60 / C5	23
C24	147/NOTE	62 / D5	24
C25	147/NOTE	64 / E5	25
C26	147/NOTE	65 / F5	26
C27	147/NOTE	67 / G5	27
C28	147/NOTE	69 / A5	28
C29	147/NOTE	71 / B5	29
C30	147/NOTE	72 / C6	30
ZONED GROUP A CONTROLS			
A18	PITCH BEND	14-bit	18
A19	1/MODULATION	0-127	19
A20	CH PRESSURE	0-127	20
A21	11/EXPRESSION	0-127	21
A22	64/SUSTAIN TOGGLE	0/127	22

Appendix 6 – M-Audio AXIOM 49 Generic Preset 17 Breakdown

M-AUDIO AXIOM 49 PATCH 17 (Use for MIDI Learn)			
NAME	CTRL	RANGE	WIDGET ID
GROUP D SLIDERS			
D9	110/Generic	0-127	9
D10	111/Generic	0-127	10
D11	112/Generic	0-127	11
D12	113/Generic	0-127	12
D13	114/Generic	0-127	13
D14	115/Generic	0-127	14
D15	116/Generic	0-127	15
D16	117/Generic	0-127	16
D17	118/Generic	0-127	17
GROUP D BUTTONS (MIN/MAX TOGGLE)			
D37 / Z1	52/Generic	0-127	37
D38 / Z2	53/Generic	0-127	38
D39 / Z3	54/Generic	0-127	39
D40 / Z4	55/Generic	0-127	40
D41 / G1	56/Generic	0-127	41
D42 / G2	57/Generic	0-127	42
D43 / G3	58/Generic	0-127	43
D44 / G4	59/Generic	0-127	44
D37	60/Generic	0-127	45
GROUP B ROTARIES			
B1	102/Generic	0-127	1
B2	103/Generic	0-127	2
B3	104/Generic	0-127	3
B4	105/Generic	0-127	4
B5	106/Generic	0-127	5
B6	107/Generic	0-127	6
B7	108/Generic	0-127	7
B8	109/Generic	0-127	8
GROUP B BUTTONS (MIN/MAX TOGGLE)			
B31 / LOOP	20/Generic	127-127	31
B32 / REW	21/Generic	127-127	32
B33 / FF	22/Generic	127-127	33
B34 / STOP	23/HC Mod Depth	127-127	34
B35 / PLAY	24/Generic	127-127	35
B36 / REC	25/Generic	127-127	36
GROUP C PADS			
C23	147/NOTE	60 / C5	23
C24	147/NOTE	62 / D5	24
C25	147/NOTE	64 / E5	25
C26	147/NOTE	65 / F5	26
C27	147/NOTE	67 / G5	27
C28	147/NOTE	69 / A5	28
C29	147/NOTE	71 / B5	29
C30	147/NOTE	72 / C6	30
ZONED GROUP A CONTROLS			
A18	PITCH BEND	14-bit	18
A19	1/MODULATION	0-127	19
A20	CH PRESSURE	0-127	20
A21	11/EXPRESSION	0-127	21
A22	64/SUSTAIN TOGGLE	0/127	22