



MIDI SWEET SERIES
MIDI SWEET : MIDI Module Unit [AUDIO UNIT]
MANUAL



MIDI SWEET: MIDI Module Unit

MIDI Module Unit continues our MIDI SWEET series and is one of the (more advanced) tools providing essential or experimental but useful functions for MIDI connectivity in Audio Unit format.

MIDI Module Unit

MIDI Module Unit is a 16 x multi timbre Sound Module (16 MIDI channels) in Audio Unit format, that basically implements the General MIDI Standard.

It is considered an experimental Audio Unit, because it uses dynamic voice- (and thus memory) allocation to prove some rumours and claims wrong, generalised claims about so-called “forbidden” memory allocation on realtime DSP systems.

Conclusion: Without dynamic memory allocation, many powerful concepts of music creation would just not be possible inside of Audio Units. Such claims are ridiculous and just wrong.

With Module Unit you can play up to a maximum of 1024 dynamically allocated voices of an integrated sample-based wavetable synthesizer at ones. These voices are mapped to the 16 internal MIDI and audio channels and this mapping is also done dynamically while playing with the device in realtime.

There are 2 integrated send effects, a reverb and a chorus too (internal send busses) which can be mixed to the internal audio channels, usually controlled by MIDI controllers.

MIDI Module Unit can be remoted with most important MIDI controllers, defined in the GM standard, so that MIDI files can be played directly thru its engine. An example of such controllers are Gain (007) and Pan (010).

This is the first multi timbre GM sound module in Audio Unit format, as we know. Everything in MIDI Module Unit will be automated with MIDI controllers, rather than Audio Unit

parameter automation. It basically behaves like any external Sound Module. Although, there may be some additional AU parameters that can be used for audio unit automation.

MIDI Module has only one stereo audio output, because we think, that multiple outputs are not supported by most host applications, although it would be definitively possible with iOS and its AudioGraph implementation.

The user interface implements a virtual mixer console environment, where important controllers can be edited per touch screen and automated MIDI action (i.e. playing MIDI files thru it) can be watched.

The mixer environment will generate MIDI data, similar of that, what the mixer in our MIDI Player Module is generating. Such controllers can be sent to external connected devices too.

MIDI IMPLEMENTATION

The following is a patch list of the included voices:

A note to numbers: In a computer world (and thus with MIDI) everything is zero-index based, however, real word numbering starts mostly with the number one rather than with zero. By the way, a human living does start with year zero too...

The table only displays the basic patches on bank 0. There may be variations of the tones in other banks.

Number	Name	Number	Name
	Piano		Chromatic Percussion
1 (0)	Acoustic Grand Piano (Flügel)	9 (8)	Celesta
2 (1)	Bright Acoustic Piano (Klavier)	10 (9)	Glockenspiel
3 (2)	Electric Grand Piano	11 (10)	Music Box (Spieluhr)
4 (3)	Honky-tonk	12 (11)	Vibraphone
5 (4)	Electric Piano 1 (Rhodes)	13 (12)	Marimba
6 (5)	Electric Piano 2 (Chorus)	14 (13)	Xylophone
7 (6)	Harpsichord (Cembalo)	15 (14)	Tubular Bells (Röhrenglocken)
8 (7)	Clavi (Clavinet)	16 (15)	Dulcimer (Hackbrett)
	Organ (Orgel)		Guitar (Gitarre)
17 (16)	Drawbar Organ (Hammond)	25 (24)	Acoustic Guitar (Nylon)
18 (17)	Percussive Organ	26 (25)	Acoustic Guitar (Steel - Stahl)
19 (18)	Rock Organ	27 (26)	Electric Guitar (Jazz)
20 (19)	Church Organ (Kirchenorgel)	28 (27)	Electric Guitar (clean - sauber)
21 (20)	Reed Organ (Drehorgel)	29 (28)	Electric Guitar (muted - gedämpft)
22 (21)	Accordion	30 (29)	Overdriven Guitar (übersteuert)
23 (22)	Harmonica	31 (30)	Distortion Guitar (verzerrt)
24 (23)	Tango Accordion (Bandeon)	32 (31)	Guitar harmonics (Harmonien)
	Bass		Strings (Streicher)
33 (32)	Acoustic Bass	41 (40)	Violin (Violine - Geige)
34 (33)	Electric Bass (finger)	42 (41)	Viola (Viola - Bratsche)

35 (34)	Electric Bass (pick - gezupft)	43 (42)	Cello (Violoncello - Cello)
36 (35)	Fretless Bass (bundloser Bass)	44 (43)	Contrabass (Violone - Kontrabass)
37 (36)	Slap Bass 1	45 (44)	Tremolo Strings
38 (37)	Slap Bass 2	46 (45)	Pizzicato Strings
39 (38)	Synth Bass 1	47 (46)	Orchestral Harp (Harfe)
40 (39)	Synth Bass 2	48 (47)	Timpani (Pauke)
	Ensemble		Brass (Blechbläser)
49 (48)	String Ensemble 1	57 (56)	Trumpet (Trompete)
50 (49)	String Ensemble 2	58 (57)	Trombone (Posaune)
51 (50)	SynthString 1	59 (58)	Tuba
52 (51)	SynthString 2	60 (59)	Muted Trumpet (gedämpfte Trompete)
53 (52)	Choir Aahs	61 (60)	French Horn (Französisches Horn)
54 (53)	Voice Oohs	62 (61)	Brass Section (Bläasersatz)
55 (54)	Synth Voice	63 (62)	SynthBrass 1
56 (55)	Orchestra Hit	64 (63)	SynthBrass 2
	Reed (Holzbläser)		Pipe (Flöten)
65 (64)	Soprano Sax	73 (72)	Piccolo
66 (65)	Alto Sax	74 (73)	Flute (Flöte)
67 (66)	Tenor Sax	75 (74)	Recorder (Blockflöte)
68 (67)	Baritone Sax	76 (75)	Pan Flute
69 (68)	Oboe	77 (76)	Blown Bottle
70 (69)	English Horn	78 (77)	Shakuhachi
71 (70)	Bassoon (Fagott)	79 (78)	Whistle (Pfeifen)
72 (71)	Clarinet	80 (79)	Ocarina
	Synth Lead (Solo)		Synth Pad (Flächen)
81 (80)	Square (Rechteck)	89 (88)	New Age
82 (81)	Sawtooth (Sägezahn)	90 (89)	Warm
83 (82)	Calliop	91 (90)	Polysynth
84 (83)	Chiff	92 (91)	Choir
85 (84)	Charang	93 (92)	Bowed (Streicher)
86 (85)	Voice	94 (93)	Metallic
87 (86)	Fifths	95 (94)	Halo
88 (87)	Bass + Lead	96 (95)	Sweep

	Synth Effects		Percussion
97 (96)	Rain (Regen)	105 (104)	Sitar Ethnik
98 (97)	Soundtrack	106 (105)	Banjo
99 (98)	Crystal	107 (106)	Shamisen
100 (99)	Atmosphere	108 (107)	Koto
101 (100)	Brightness	109 (108)	Kalimba
102 (101)	Goblins	110 (109)	Bag Pipe (Dudelsack)
103 (102)	Echoes	111 (110)	Fiddle
104 (103)	Sci-Fi (Science Fiction)	112 (111)	Shanai
	Percussive		Sound Effects
113 (112)	Tinkle Bell (Glocke)	121 (120)	Guitar Fret. Noise (Gitarrensaitenquitschen)
114 (113)	Agogo	122 (121)	Breath Noise (Atem)
115 (114)	Steel Drums	123 (122)	Seashore (Meeresbrandung)
116 (115)	Woodblock	124 (123)	Bird Tweet (Vogelgezwitscher)
117 (116)	Taiko Drum	125 (124)	Telephone Ring
118 (117)	Melodic Tom	126 (125)	Helicopter
119 (118)	Synth Drum	127 (126)	Applause
120 (119)	Reverse Cymbal (Becken rückwärts)	128 (127)	Gun Shot (Gewehrusschuss)

The following list is about commonly used MIDI controllers. Not everything (i.e. Yamaha XG / Roland GS extensions) is implemented yet. We will complete this with later updates.

Continuous Controllers (MSB):

- 0 Bank Select MSB
- 1 Modulation
- 2 Breath Controller
- 3 nicht definiert
- 4 Foot Pedal
- 5 Portamento Time
- 6 DataEntry MSB
- 7 Volume
- 8 Balance

- 9 nicht definiert
- 10 Panpot
- 11 Expression
- 12-15 nicht definiert
- 16 General Purpose 1
- 17 General Purpose 2
- 18 General Purpose 3
- 19 General Purpose 4
- 20 - 31 nicht definiert

Continuous Controllers (LSB):

- 32 Bank Select LSB
- 33 Modulation LSB
- 34 Breath Controller LSB
- 35 LSB
- 36 Foot Pedal LSB
- 37 Portamento Time LSB
- 38 DataEntry LSB
- 39 Volume LSB
- 40 Balance LSB
- 41 LSB
- 42 Panpot LSB
- 43 Expression LSB
- 44 - 47 nichtdefiniert LSB
- 48 General Purpose 1 LSB
- 49 General Purpose 2 LSB
- 50 General Purpose 3 LSB
- 51 General Purpose 4 LSB
- 52-63 nicht definiert LSB

Switches:

- 64 Sustain Pedal (Damper)
- 65 Portamento
- 66 Sustainuto
- 67 Soft Pedal

68 nicht definiert
69 Hold 2
70 nicht definiert
71 Harmonic Content (XG)
72 Release Time (XG)
73 Attack Time (XG)
74 Brightness (XG)
75 - 79 nicht definiert
80 General Purp 5
81 General Purp 6
82 General Purp 7
83 General Purp 8
84 - 90 nicht definiert
91 External Effects Depth
92 Tremolo Depth
93 Chorus Depth
94 Celeste Depth
95 Phaser Depth
96 Data Increment
97 Data Decrement
98 Non Registered Parameter LSB
99 Non Registered Parameter MSB
100 Registered Parameter LSB
101 Registered Parameter MSB
102 - 120 nicht definiert

Channel Mode Messages:

121 Reset All Controllers
122 Local Control Off
123 All Notes Off
124 Omni Mode Off
125 Omni Mode On
126 Mono Mode On = Poly Mode Off
127 Poly Mode On = Mono Mode Off

(c) 2019 digitster.com