208MIDI Implementation

version 31.0 additions/changes in blue (Aug 2023).

All "Easel Commands" have a 208MIDI pre-installed

To control 208C:	MIDI Input data	Channel
Keyboard voltage	Note #, Pitchbend	1
	Portamento rate CC 5	
	Note #, Pitchbend when 208C is in remote or both mode *(see note 5)*	internal bus A
complex oscillator pitch	Note #, Pitchbend	2, 6, 8
	Portamento rate CC 5	
modulation oscillator frequency	Note #, Pitchbend	3, 7, 9
	Portamento rate CC 5	
Pitchbend depth (v30.5 fixed the linearity of its response) (Note: It's a global and memorized setting.)	CC 9 (0-127 = +/-1-12 semitones)	1,2,3,6,7,8,9
timbre	CC 1 (mod wheel)	1,2, 6, 8 (not 3)
modulation amount	CC 2 (breath)	1,2, 6, 8 (not 3)
Purple pressure banana CV output	Channel pressure (aftertouch) or CC 14 *(See note 1)*	1,2, 3, 7, 8, 10
The slew rate of the pressure CV	CC 3 *(see note 2)*	1,2, 3, 6, 8
"from card" banana CV output	Velocity	1, 6, 9
Keyboard trigger	Note On (all above note#12)	1, bus A
Sequencer trigger	Note On Note # 0-2 (C to D)	1,2,3,4,5**
Random trigger	Note On Note # 3-5 (Eb-F)	1,2,3,4,5**
Envelope Generator trigger	Note On Note # 6-8 (F# to Ab)	1,2,3,4,5**
	Note On	6, 9
Pulser trigger	Note On only Note # 9-11 (A-B)	1,2,3,4,5**
	Note On	7, 8, 10
Reset pressure and oscillator control to 0v	CC 121 (on respective channel)	1,2,3,6,7,8,9
EG and Pulser off	CC 123 CC 120	
Internal bus C* *Only sent in remote or both mode to AuxCard *(see note 3)* or to 200e modules *(see note 4)*	Note On, Note #, Velocity	4, 10

** See note 6 below
Please note that in order to get the full oscillator range starting from C1 (32.7Hz) and get expected relative pitches, you need to move the frequency and pitch faders to their lowest position and fine tune as necessary. The 208C MIDI note range for the oscillators starts at MIDI note# 24.

Notes:
1) Polyphonic aftertouch is not supported. For those controllers that put out polyphonic aftertouch instead of Channel

pressure/aftertouch, or for controllers and DAWs where it's simpler to assign controller numbers, we allow MIDI to CV conversion to these same pressure jacks via MIDI controller# 14.

2) Pressure is set to a default slew rate. Many keyboard controllers have pressure that is not smooth and requires some data smoothing/slewing in order to be musical.

3) A complementary module to the 208/208C, the Auxiliary Card called "Music Easel AuxCard" can be purchased separately for use in the program card slot of a 208 or 208C. The AuxCard receives pitch data (down to 16Hz) from internal bus C if its oscillator range switch is set in the middle position. The yellow "keybd bus" illuminates in this setting and flashes when it receives data.

4) The 259e, 261e, 281e, and 292e can all receive internal bus C data if their module ID is set to C and "remote" is enabled. This does require that a preset manager is present in the system.

5) 200e modules that can send note data on internal bus A include the 225e, 225h, 226h, the 225m (the Firmware Card programmed for USB-MIDI input) and most importantly, the 218e keyboard.

**6) The trigger assignments repeat in higher octaves on Channel 5 so that limited hardware sequencers or keyboards can play triggers if they don't transpose to the lowest MIDI octave. (See note 8 below about the default mode for these triggers)

7) New is the specific pairing of the EG and pulser with C.Osc and M.Osc on channels 6-9. Look at the chart for specifics. There are also pairing for CC controls on channels 6-9 in order to give you non-conflicting CV control combinations:
-Timbre and modulation pair with the C.Osc channel
-Velocity pairs with the EG channel
-Pressure pairs with the Pulser channel

Overview of assignments:

Ch 1: Keyboard and all control assignments: keybd pitches, pressure, velocity (from card), timbre, modulation amt.
Ch2: C.Osc pitches, pressure, timbre, mod amt.
Ch3: Mod.Osc, pressure
Ch4: Internal bus C (AuxCard)
Ch5: only triggers (same as lowest possible range but in normal keyboard range) and velocity on higher notes.
Ch6: C.Osc pitches, timbre and mod amt, velocity and EG
Ch7: Mod.Osc pitches, pressure and pulser
Ch8: C.Osc pitches, timbre and mod amt, pressure and pulser
Ch9: Mod.Osc pitches, velocity and EG
Ch10: Internal bus C (AuxCard) pressure and pulser

Hint: Odd=Mod. Mod.Osc. is always on the odd channels.
And if you are using the 218e and want a slower attack than the pulser, consider using pressure to control the gate.

8) Note that the EG and Pulser "mode" selections switches do not have control over the direct EG and Pulser trigger inputs. You cannot set up transient mode for any channel other than on channel 1—using the keyboard pulse as a source. Direct control will always act like it's in a sustained mode. You must use MIDI note lengths to control time. This is because, without creating new circuitry distinct from the original 208, only the "source" outputs go through the mode switches. The keyboard "trigger source" goes through the mode switch. So if you use MIDI channel 1 and select keyboard as the source, you will be able to switch the mode. In other words, to take full advantage of the EG and especially the Pulser, if you play on MIDI channels 5-10, you often want to change the duration notes in your tracks to be as short as possible to emulate transient mode. Also a reminder that the Pulser on all 208's does not put out its own trigger (to trigger the sequencer or random for instance) until it reaches the end of its duration; not at its start.

9) Pitchbend range is fixed in the latest software to better match the CC9 output of the 218eV3: CC9 value of 10, 20, 30,. . . 110, 120 match half step intervals of an octave. Pitchbend range works in the older 208MIDI software, but the intervals did not linearly match with the CC9 stepped values.