

Using Synclavier³ with Core MIDI



5.3.0

Legacy versions of Synclavier® PowerPC™ for Mac OS 9 included a MIDI driver for “OMS” (Opcode System's Open Music System). That MIDI driver provided "virtual" MIDI ports for MIDI Clock and MIDI Timecode, the Synclavier® keyboard, and each Synclavier® sequencer track.

Release 5.3.0 of Synclavier³ implements similar MIDI functionality (and more!) with a full-featured Mac OS X Core MIDI Driver. Release 5.3.0 of Synclavier³ introduces fully routable “Virtual” output ports that can be addressed from the MIDI Routing Display (J page).

The general capabilities of the Synclavier³ Core MIDI Driver are as follows:

MIDI Input to Synclavier³ can –

- trigger Synclavier® sounds on the keyboard or any sequencer track in real time
- be recorded into the Synclavier® sequencer
- control the Synclavier® with MIDI Clock and Song Position messages
- be received from a real hardware MIDI port connected to your Mac
- be received from a virtual sequence engine running on your Mac
- be received from a virtual sequence engine running on any Mac on your local network

Synclavier³ MIDI Output can –

- be generated from the keyboard or Synclavier® tracks in real time
- include MIDI Time Code generated by the Synclavier® sequencer
- include MIDI Clock and Song Position messages
- be routed to a hardware MIDI port connected to your Mac
- be routed to a virtual sequence engine running on your Mac
- be routed to a virtual sequence engine running on any Mac on your local network

Please note that the Synclavier® Real Time Software (and documentation) uses the designator “OMS” to refer to the virtual MIDI capabilities that are implemented within the Mac OS X Core MIDI driver.

The capabilities of the Synclavier³ MIDI Driver are available on systems with no Synclavier® hardware by using the “Virtual” Synclavier³ PCI Kernel Driver (described under Installation on page 3).

What is Core MIDI

Apple’s Core MIDI system is a collection of system software that lets you describe your MIDI hardware setup so that hardware and software purchased from different vendors can work together. The Synclavier³ Core MIDI Driver creates "virtual" MIDI Ports that can send and receive MIDI data from other Macintosh applications (or hardware devices) without the delays normally associated with MIDI devices. Additionally, Synclavier³ includes a MIDI Patching window that lets you send or receive MIDI data to or from other MIDI hardware devices connected to your system.

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Installing the Synclavier³ Core MIDI driver

- 1) Core MIDI itself requires no separate installation; it is built into Mac OS X.
- 2) Run the Synclavier³ Installer which is included in the downloaded Synclavier³ disk image file. This will install the Synclavier³ Core MIDI driver and the Synclavier³ PCI Kernel Driver
- 3) If your hardware installation does not include the PCI hardware interface, you will need to install the “Virtual PCI-1” driver. See the “Read Me” file in the “Virtual MIDI Users” folder of the installation disk image. If you require the “Virtual PCI-1” driver, it must be installed after a full Synclavier³ installation.

Selecting Synclavier³ Virtual MIDI Ports from other Macintosh applications

I/O	Port System Name	Show As	Visible	State	In 'All Input
In	TASCAM US-428 US-428 Port 1	TASCAM US-428 US-428 Port 1	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	TASCAM US-428 US-428 Port 2	TASCAM US-428 US-428 Port 2	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	TASCAM US-428 US-428 Control Port	TASCAM US-428 US-428 Control Port	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Keyboard	SynclavierX Keyboard	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX MIDI Time Code	SynclavierX MIDI Time Code	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Midi Clock	SynclavierX Midi Clock	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 1 - 16	SynclavierX Tracks 1 - 16	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 17 - 32	SynclavierX Tracks 17 - 32	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 33 - 48	SynclavierX Tracks 33 - 48	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 49 - 64	SynclavierX Tracks 49 - 64	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 65 - 80	SynclavierX Tracks 65 - 80	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 81 - 96	SynclavierX Tracks 81 - 96	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 97 - 112	SynclavierX Tracks 97 - 112	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 113 - 128	SynclavierX Tracks 113 - 128	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 129 - 144	SynclavierX Tracks 129 - 144	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 145 - 160	SynclavierX Tracks 145 - 160	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 161 - 176	SynclavierX Tracks 161 - 176	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 177 - 192	SynclavierX Tracks 177 - 192	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
In	SynclavierX Tracks 193 - 200	SynclavierX Tracks 193 - 200	<input checked="" type="checkbox"/>	Active	<input checked="" type="checkbox"/>
Out	TASCAM US-428 US-428 Port 1	TASCAM US-428 US-428 Port 1	<input checked="" type="checkbox"/>	Inactive	
Out	TASCAM US-428 US-428 Port 2	TASCAM US-428 US-428 Port 2	<input checked="" type="checkbox"/>	Inactive	
Out	TASCAM US-428 US-428 Control Port	TASCAM US-428 US-428 Control Port	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Keyboard	SynclavierX Keyboard	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX MIDI Time Code	SynclavierX MIDI Time Code	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Midi Clock	SynclavierX Midi Clock	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 1 - 16	SynclavierX Tracks 1 - 16	<input checked="" type="checkbox"/>	Active	
Out	SynclavierX Tracks 17 - 32	SynclavierX Tracks 17 - 32	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 33 - 48	SynclavierX Tracks 33 - 48	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 49 - 64	SynclavierX Tracks 49 - 64	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 65 - 80	SynclavierX Tracks 65 - 80	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 81 - 96	SynclavierX Tracks 81 - 96	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 97 - 112	SynclavierX Tracks 97 - 112	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 113 - 128	SynclavierX Tracks 113 - 128	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 129 - 144	SynclavierX Tracks 129 - 144	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 145 - 160	SynclavierX Tracks 145 - 160	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 161 - 176	SynclavierX Tracks 161 - 176	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 177 - 192	SynclavierX Tracks 177 - 192	<input checked="" type="checkbox"/>	Inactive	
Out	SynclavierX Tracks 193 - 200	SynclavierX Tracks 193 - 200	<input checked="" type="checkbox"/>	Inactive	

The image above shows how Synclavier³ virtual MIDI ports are selected from the Cubase SX application. Other Macintosh applications will have a similar mechanism for choosing Synclavier³ virtual MIDI ports.

Some applications may omit the 'Synclavier³' portion of the Synclavier³ virtual MIDI port name.

The Synclavier³ Keyboard Virtual MIDI Port

The Synclavier³ Keyboard virtual MIDI port can send MIDI data in response to notes played on the Synclavier[®] keyboard or in response to controller movements from the mod wheel, pitch wheel, breath controller, pedal 1, pedal 2 or the sustain foot switch. Additionally, MIDI data sent to the Synclavier³ Keyboard virtual MIDI port can trigger Synclavier[®] sounds as if they were played live.

Sending MIDI Data from the Synclavier³ Keyboard

To use the Synclavier[®] keyboard to send MIDI data to a Macintosh application, you must route the keyboard MIDI data to the Synclavier³ Keyboard virtual MIDI output. This is done either using the MIDI button on the VK button panel:



or from the MIDI Display (J) screen:

	Instrument Name	Out	Chan	Pres
KBD	*Unnamed Timbre*	OMS	1	

Note: the Synclavier[®] Keyboard virtual MIDI port always sends data using MIDI Channel 1. MIDI data being sent to the Synclavier[®] Keyboard virtual MIDI port can be sent using any MIDI channel number.

The receiving Macintosh application also must be set up to receive MIDI data from the Synclavier³ Keyboard virtual MIDI port. How this is done will depend on which Macintosh application you are using. The image on the previous page shows how virtual MIDI ports are selected in Cubase SX.

Sending MIDI Data to the Synclavier® Keyboard

The sound that is currently active on the Synclavier® keyboard can be triggered from any Macintosh application by sending MIDI data to the Synclavier³ Keyboard virtual MIDI port.

In order for MIDI data sent to the Synclavier³ Keyboard virtual MIDI port to be recognized by Synclavier³, you must enable “OMS” MIDI input. This can be done using the Synchronization panel of the Audio Event Editor:



“OMS” MIDI input can also be enabled directly from the MIDI Routing Display:



In release 5.2.1 of Synclavier³, the “OMS” MIDI input will be enabled by default if there is no other Synclavier® MIDI hardware installed in the system.

Virtual MIDI Ports for the Synclavier® Sequencer

MIDI data **from** Synclavier® sequencer tracks can be sent either to dedicated virtual MIDI ports or to the fully-routable virtual MIDI ports introduced in Release 5.3.0.

The dedicated virtual MIDI ports contain MIDI data from a fixed set of sequencer tracks as described in the following table. The MIDI Channel of each note on/note off message indicates the specific sequencer track.

Synclavier ³ Tracks 1-16	Track:	1	2	3	4	5	6	7	8
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	9	10	11	12	13	14	15	16
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 17-32	Track:	17	18	19	20	21	22	23	24
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	25	26	27	28	29	30	31	32
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 33-48	Track:	33	34	35	36	37	38	39	40
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	41	42	43	44	45	46	47	48
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 49-64	Track:	49	50	51	52	53	54	55	56
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	57	58	59	60	61	62	63	64
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 65-80	Track:	65	66	67	68	69	70	71	72
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	73	74	75	76	77	78	79	80
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 81-96	Track:	81	82	83	84	85	86	87	88
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	89	90	91	92	93	94	95	96
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 97-112	Track:	97	98	99	100	101	102	103	104
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	105	106	107	108	109	110	111	112
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 113-128	Track:	113	114	115	116	117	118	119	120
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	121	122	123	124	125	126	127	128
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 129-144	Track:	129	130	131	132	133	134	135	136
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	137	138	139	140	141	142	143	144
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 145-160	Track:	145	146	147	148	149	150	151	152
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	153	154	155	156	157	158	159	160
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 161-176	Track:	161	162	163	164	165	166	167	168
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	169	170	171	172	173	174	175	176
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 177-192	Track:	177	178	179	180	181	182	183	184
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:	185	186	187	188	189	190	191	192
	MIDI Channel:	9	10	11	12	13	14	15	16
Synclavier ³ Tracks 193-200	Track:	193	194	195	196	197	198	199	200
	MIDI Channel:	1	2	3	4	5	6	7	8
	Track:								
	MIDI Channel:								

Sending MIDI Data from the Synclavier® Sequencer

The fully-routable virtual MIDI ports can contain data from any sequencer track and the keyboard.

Use the MIDI Display (J) screen to send MIDI data from a Synclavier® track to its dedicated virtual MIDI port, or to one of the 64 fully-routable Virtual MIDI Ports:

	Instrument Name	Out	Chan	Pres
KBD	*Unnamed Timbre*			
1	Hi Strings	OMS	1	INDU
2	Low Strings	OMS	2	CHAN
3	Solo Guitar	OMS	3	
4				
5				
6				
7				
8				

or

	Instrument Name	Out	Chan	Pres
KBD	*Unnamed Timbre*	V2	1	
1				
2				

Sending MIDI Data to the Synclavier® Sequencer

The timbre that is stored on each Synclavier® track can be triggered from any Macintosh application by sending MIDI data to the corresponding Synclavier³ Tracks virtual MIDI port. How this is accomplished will depend on which Macintosh application you are using.

CuBase SX uses an output selection button to direct MIDI data to a particular MIDI port and an intelligent data entry field to specify the MIDI channel number that is used.



CuBase SX MIDI Output Device and Channel Selection

In order for MIDI data sent to the Synclavier³ Keyboard virtual MIDI port to be recognized by Synclavier³, you must enable “OMS” MIDI input. This can be done using the Synchronization panel of the Audio Event Editor:



“OMS” MIDI input can also be enabled directly from the MIDI Routing Display:

```
Sync In:  OFF      Inputs: ALL
Sync Out: OFF      Clock Type: CLK
Echo:     OFF      OMS Input: ON
```

In release 5.2.1 of Synclavier³, the “OMS” MIDI input will be enabled by default if there is no other Synclavier® MIDI hardware installed in the system.

The Synclavier³ MIDI Clock and MIDI Timecode virtual MIDI Ports

Synclavier³ can send and receive MIDI Clock data through the Synclavier³ MIDI Clock virtual port. Additionally, Synclavier³ can send MIDI Timecode data through the Synclavier³ MIDI Time Code virtual port.

Synclavier³ cannot recognize incoming MIDI Timecode; it can only generate MIDI Timecode output. Additionally, Synclavier³ cannot send both MIDI Clock and MIDI Timecode information at the same time. These limitations may be addressed in a later software release.

Sending MIDI Clock or MIDI Timecode Data from Synclavier³

Sending MIDI Clock or MIDI Timecode data can be activated from the VK button panel by holding the MIDI button and pressing the SMPTE button. While holding the MIDI button, press the SMPTE button once for MIDI Clock data, or twice for MIDI Timecode data. Continue to hold the MIDI button and press the External Sync button to select the timecode frame rate (drop, non-drop, NTSC 30, 25 or 24).

A black rectangular display with white text showing "MIDI CLK OUT:OMS".

or

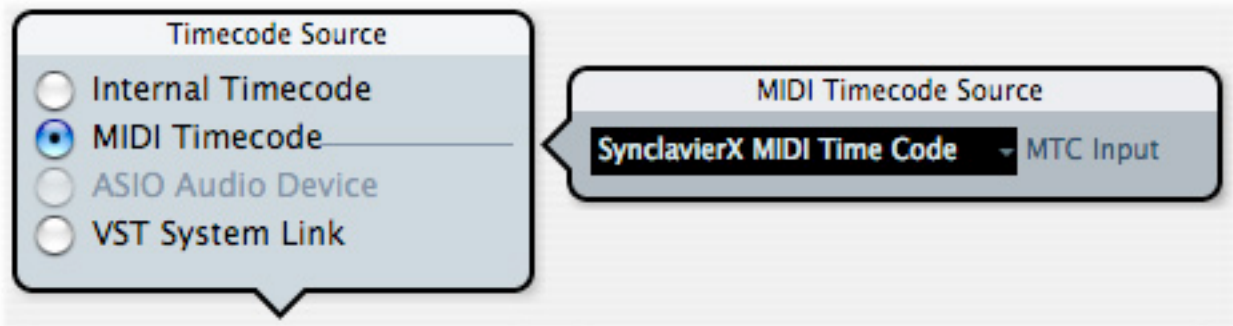
A black rectangular display with white text showing "MIDI TC OUT:OMS" on the first line and "Drop Frame MTC" on the second line.

After holding the MIDI button and pressing the SMPTE button, use the knob to select which MIDI output is used to send the MIDI Clock or MIDI Timecode data.

You can also use the Synchronization panel of the Audio Event Editor to turn on or off MIDI Clock or MIDI Timecode output:

A black rectangular panel with white text. At the top, it says "SYNCHRONIZATION AND TIME CONTROL". Below that, it says "Display Times In" followed by "Seconds" in a larger font.Two rectangular buttons side-by-side. The left button is white with black text "Send OMS CLK". The right button is black with white text "Send OMS MTC".

The receiving Macintosh application also must be set up to receive MIDI Clock or MIDI Timecode data from the Synclavier³ MIDI Clock or MIDI Timecode virtual port. How this is done will depend on which Macintosh application you are using.



CuBase SX MIDI Timecode Source Selection

Sending MIDI Clock Data to Synclavier³

Synclavier³ can chase MIDI Clock data being sent to the Synclavier³ MIDI Clock virtual port. As of Release 5.2.1 it cannot chase MIDI Timecode data.

Use the Synchronization panel of the Audio Event Editor to enable external synchronization to “OMS” MIDI:

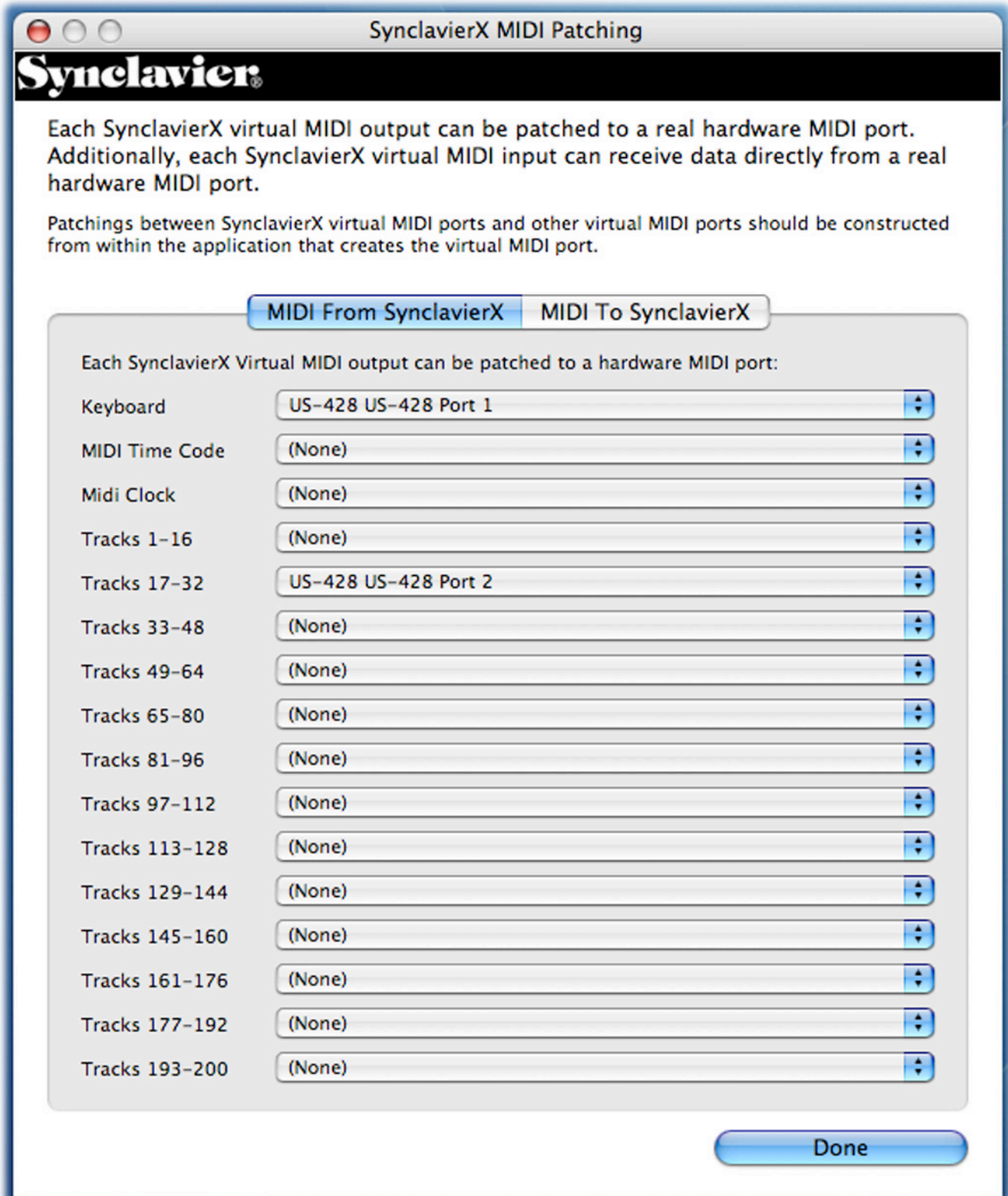


Or you may activate external synchronization to “OMS” MIDI from the VK button panel by holding the MIDI button and pressing the External Sync Mode button:

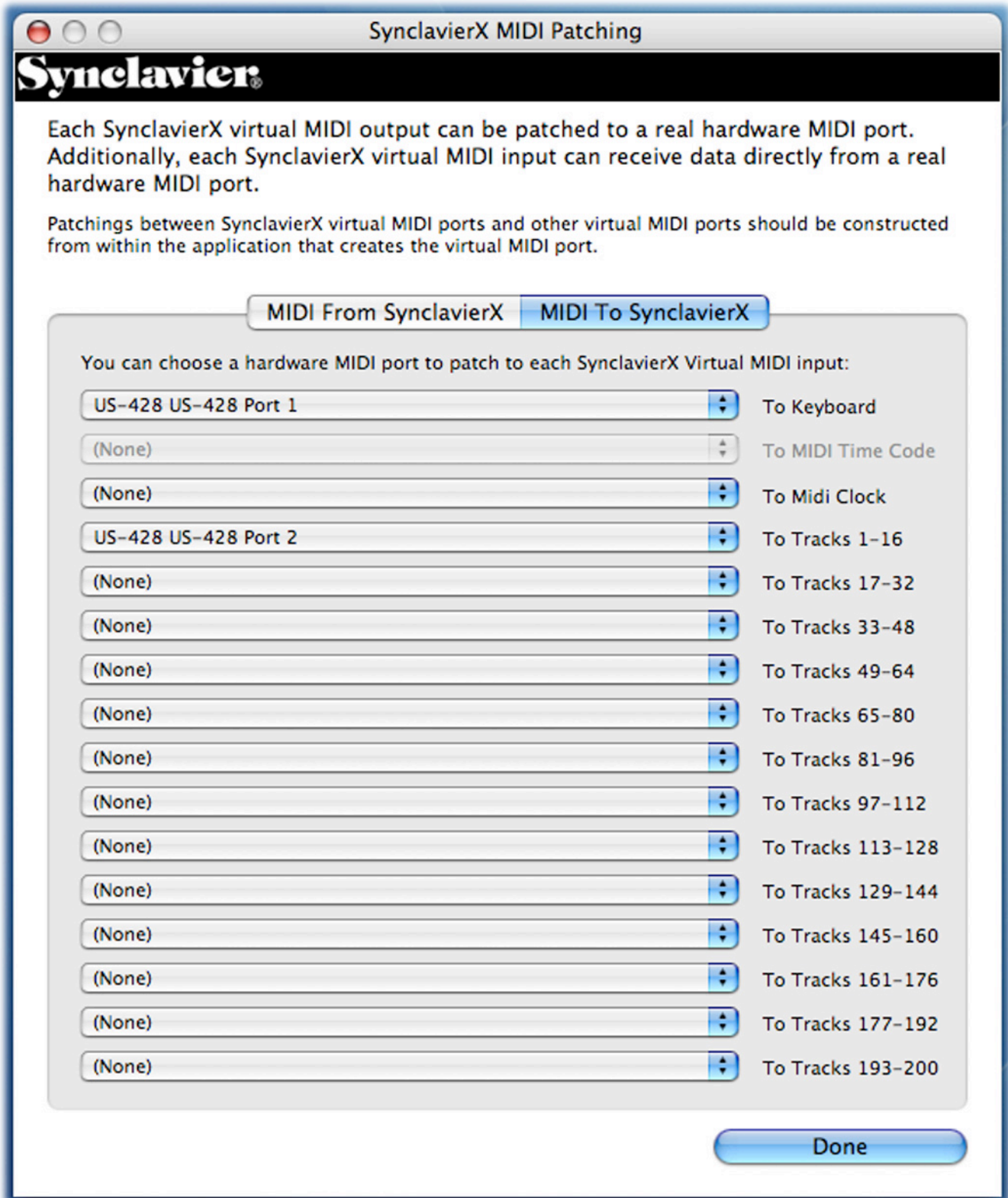


Sending and receiving MIDI data from Synclavier³ to or from real MIDI hardware ports (MIDI Patching Window)

Each Synclavier³ virtual MIDI output can be patched to a real hardware MIDI port. Patchings are set up using the MIDI Patching window which is available from the Window menu. See page 3 (keyboard), page 6 (sequencer tracks) or page 9 (MIDI time code/MIDI clock) to see how to enable MIDI output.



Additionally, each Synclavier³ virtual MIDI input can receive data from a real hardware MIDI port.



You must enable “OMS” MIDI Input (see page 4) for MIDI data sent to a Synclavier³ virtual MIDI port to be recognized by Synclavier³.

Transferring a sequence from Synclavier³ to an external Macintosh application

The Synclavier³ MIDI driver can be used to accurately transfer a Synclavier® sequence to an external Macintosh application. The general steps are:

- 1) Set up the sequence to send MIDI (Midi Routing Display)
- 2) Set up the sequence to generate MIDI time code (Audio Event Editor Sync Panel)
- 3) Set up your external application to sync to MIDI Time Code. Make sure the frame rate matches between Synclavier³ and your external application.
- 4) Create MIDI tracks in your external application as needed. Set the MIDI tracks up to listen on the appropriate channel and virtual MIDI port as indicated by the table on page 5.
- 5) Record-enable the tracks in your external application as needed.

When you start the Synclavier® sequencer, the external sequencer should start and sync using MIDI time code.

Some external applications require a 2-second pre-roll, so it might be necessary to slide all of your Synclavier® tracks to start slightly later.

Transferring a sequence on a system with no hardware voices

Due to limitations of the Synclavier® real time software, MIDI note-on/note-off events are not sent out if the system runs out of voices to play notes on a track. The work-around involves assigning an empty timbre to the track, and then enabling MIDI output for the track.

This technique can be used to transfer a legacy Synclavier® sequence to an external Macintosh application on an Mac with no associated Synclavier® hardware.