

LC Xmu

LC Xmu

LOGIC/MACKIE CONTROL EMULATION AND MANAGEMENT

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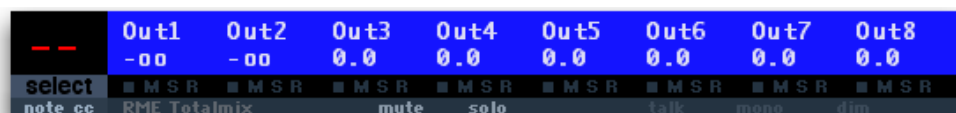
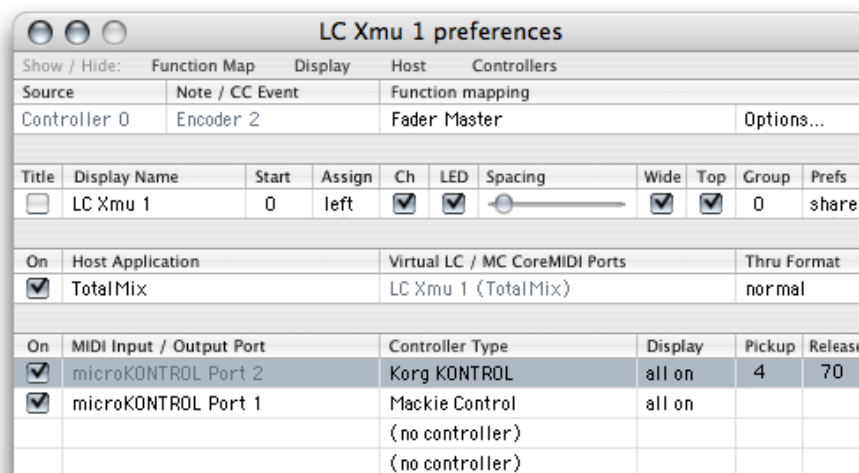
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ABOUT LC XMU

LC Xmu emulates a Logic Control (LC) or Mackie Control (MC) in software, for control and automation of almost any host application that supports the Logic/Mackie Control protocol. A hardware MIDI controller's knobs, faders, buttons or keys can be mapped to the emulated LC/MC's various functions, and the host application will behave exactly as if it has a real Logic Control or Mackie Control connected.



LC Xmu provides one-way controller-to-LC/MC function mapping for simpler controllers, and two-way control and display feedback for various more capable controllers, including a real Mackie Control. LC Xmu's onscreen display provides full visual feedback of the current state of the emulated LC/MC.

LC Xmu is a compatible, effective and flexible way of using generic MIDI controllers with your host application, without spending hours setting up and then constantly re-configuring controller assignments, mixer maps, custom consoles, MIDI learn, etc. The host application automatically binds mixer controls, plugin controls, navigation and other functions to the LC/MC controls, remapping and updating on the fly as needed.

Because it emulates the unchanging LC/MC hardware, LC Xmu is forward-compatible — if the host application's support for the LC/MC is updated, the new functionality is immediately available via LC Xmu without requiring an updated version of LC Xmu.

FEATURE SUMMARY

- Almost any hardware controller sending appropriate CC or note events may be mapped to the emulated LC/MC's faders, v-pots and buttons.
- Up to four hardware controllers may be merged into each emulated LC/MC to provide sufficient emulated LC/MC faders/v-pots/buttons.
- Some controller-specific hardware such as endless encoders, motorfaders, LCD displays, LEDs, etc, may be supported by controller-specific LC Xmu input modules.
- Non-endless “absolute” controls may be used to emulate endless “relative” v-pots (with some limitations).
- Soft takeover pickup for absolute hardware knobs and faders prevents sudden jumps in controlled parameter values when switching between different parameter sets.
- Fine adjustment modifier function allows access to the full 1024-step resolution of the emulated LC/MC's faders.
- Multiple LC Xmu instances may be run simultaneously to emulate multiple LC/MCs. XT extender unit emulation is supported.
- Multiple host applications may be addressed simultaneously or switched among on the fly, with full saved state for each host application. Host applications do not need to release the emulated LC/MC.
- Onscreen emulation of the LC/MC LCD screen, Assignment display, channel LEDs and the most relevant LED indicators for each host.
- LC Xmu displays may be resized horizontally to match hardware control spacing, and can be configured to be “always on top” when LC Xmu is in the background.
- Unused hardware controller notes and CCs may be selectively passed through to the host application for MIDI learn or for playing midi instruments and softsynths, etc.
- LC Xmu Modes allow just eight keys or buttons to access the LC/MC's eight channels of select, mute, solo, record, and v-select buttons, plus five additional user-definable sets of eight buttons, as appropriate for each host application.
- Modifier function allows each control to perform a user-definable alternate function in addition to its normal mapping.

REQUIREMENTS

- Any generic hardware controller with at least 8 faders or knobs capable of sending CC messages with absolute values (0-127),

AND:

at least **20 two-state buttons** capable of sending a separate note or CC message for button press and release (often called “momentary” button mode), or at least **20 midi keys**, or any combination of **20 buttons/keys**. You may be able to get by with fewer buttons or keys, but you may lose access to some core LC/MC functionality (depending on the host application). Multiple controllers may be merged to provide sufficient buttons/keys.

AND/OR:

Any of the following hardware controllers, for which LC Xmu provides a dedicated input module offering predefined function mapping and extended features:

Behringer BCR2000

Doepfer Pocket Dial (note you will also require additional buttons or keys as above)

Fostex VM200

JL Cooper CS-10

Korg microKONTROL or **KONTROL49**

Mackie Control, or **Logic Control** (firmware 1.02 or higher), or **hardware emulations**

Novation Remote and XStation series

- Any host application capable of supporting the Logic Control or Mackie control **via a virtual CoreMIDI port**. LC Xmu provides dedicated host support for the following host apps:

Ableton Live 5.0 or higher

Apple Final Cut Pro

Apple Soundtrack Pro

Apple/Emagic Logic Audio/Gold/Platinum/Express/Pro 5.3 or higher

Propellerheads Reason 3.0 or higher

RME TotalMix 2.01 or higher

Steinberg Cubase SX/Nuendo 3.0 or higher

MOTU applications (Digital Performer, AudioDesk, CueMix) are **not** supported, as they can't address a Mackie Control via a virtual CoreMIDI port. Annoy MOTU about this...

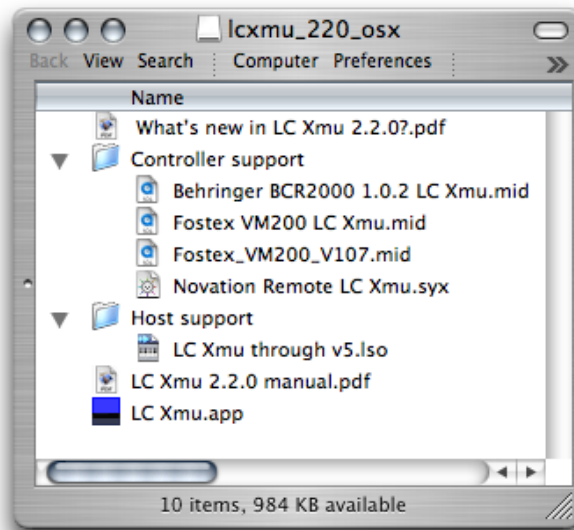
- Mac OS X 10.3.9 or higher is required.** Universal Binary for PowerPC or Intel CPU.

GETTING STARTED

Installing LC Xmu

LC Xmu is downloaded as a compressed `.gz` (gzip) archive — double-click to decompress the archive using the OS X Finder (or Stuffit Expander, if installed).

The `.gz` file will expand to an OS X `.dmg` disk image — double click the `.dmg` disk image file to mount it on the desktop (Stuffit Expander may auto-mount the expanded `.gz` archive). Double-click the mounted disk image to view its contents, if it is not automatically opened.



You may copy the files in the LC Xmu disk image anywhere you wish, or run LC Xmu from the disk image.

The OS X convention is that the LC Xmu application should be placed in the main `/Applications` folder. Command- or option-dragging the mounted disk image icon to the `/Applications` folder will copy it to that folder as a separate subfolder, including support files, subfolders and documentation (dragging without modifiers just creates an alias).

All the files LC Xmu needs to run are contained within the LC Xmu application file — this is an OSX “package” file (sometimes referred to as a “bundle”).

LC Xmu preference files will be generated as needed in your user Preferences folder, located at `~/Library/Preferences/LC Xmu/`.

What next?

If you are upgrading from LC Xmu 2.0.0 or 2.1.0, you should read the document *What's new in LC Xmu 2.2.0?.pdf*.

Please follow the instructions in the following pages to begin using LC Xmu with your controller and host application. **The order is important.**

Setting up your controller

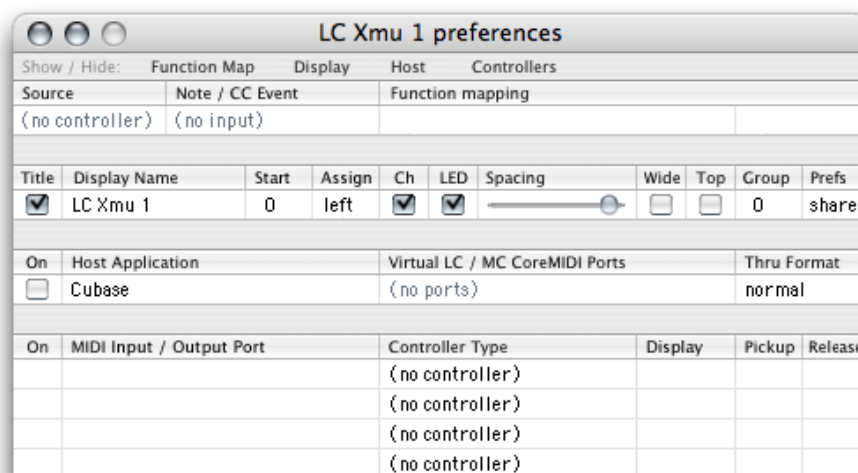
If your hardware controller requires an OS X driver you should install the driver. Consult your hardware controller's manual for connection, installation and troubleshooting information. Ensure that your hardware controller is connected via Firewire, USB or MIDI cable as appropriate, and is powered on.

Verify that your hardware controller is transmitting MIDI data to OS X CoreMIDI. You may find the **MIDI Monitor** application useful to view MIDI data transmitted from/to your hardware controller. MIDI Monitor is available free of charge from www.snoize.com/MIDIMonitor/.

Please check that your controller is working normally with your usual MIDI applications before attempting to use the controller with LC Xmu. Any hardware, connection, driver or other problems should be diagnosed and corrected before proceeding. If your controller, OS or application is misbehaving, LC Xmu won't magically make it better.

IMPORTANT — quit all MIDI applications before proceeding any further. LC Xmu creates virtual CoreMIDI ports at startup. Other applications may not handle this gracefully.

Start LC Xmu. When the blue LC Xmu display is visible, double-click anywhere in the display (or press the **P** key on your computer keyboard) to open the LC Xmu **Preferences** window.



What next?

Click the appropriate link below to go to specific setup instructions for your controller.

If your controller is not listed, but can emulate a Logic Control or Mackie Control (the Tascam US-2400 or Behringer BCF2000 for example) you should go to [Mackie Control](#).

If your controller is not listed and has multiple channels of non-assignable CC controls (for example CC7 and CC10 on MIDI channels 1–8 or 1–16, like the JL Cooper Faderbaby), you should try [Generic MIDI mixer](#).

Otherwise, if your controller is not listed below you should try [Generic controller](#), or [Generic feedback](#) if your controller can receive feedback for motorfaders or button LEDs.

[Behringer BCR2000](#)

[Doepfer Pocket Dial](#)

[Fostex VM200](#)

[Generic controller](#)

[Generic feedback](#)

[Generic MIDI mixer](#)

[JL Cooper CS-10](#)

[Korg microKONTROL / KONTROL49](#)

[Mackie Control / Logic Control](#)

[Novation Remote](#)

Behringer BCR2000

The **Behringer BCR2000** module allows the BCR2000's endless encoders to be assigned to LC Xmu **Faders**, **Vpots**, or **Jogwheel**, for jump-free, no-pickup operation. Endless encoder "acceleration" factor is emulated. Feedback is supplied to the BCR2000 button LEDs and encoder LED-rings.

Please read the [Setting up your controller](#) introduction before proceeding.

- 1 **BCR2000 firmware 1.10 is required** — this may be downloaded from Behringer's website: http://www.behringer.com/05_support/bc_download/bc_downloads.cfm?lang=ENG
- 2 **The BCR2000 should be connected via USB if possible.** If so, go to step 3.

If connected via MIDI in/out cables, LC Xmu does not provide a method to specify the MIDI output port for feedback to the controller. **LC Xmu assumes the controller output port has exactly the same name as the controller input port**, ie if your BCR2000 uses "MTP AV USB Port 4" for MIDI input, it must also be connected to "MTP AV USB Port 4" for MIDI output.

Alternately, in OS X **AudioMIDI Setup**, you may add a device named "BCR2000" and cable that to the appropriate MIDI interface input/output ports. This makes it possible to use different hardware MIDI port numbers or even different MIDI interfaces for BCR2000 input/output, because AudioMIDI Setup provides the device name to LC Xmu, regardless of the MIDI interface ports used.

- 3 **Edit the hardware "MIDI dead time"**, so the BCR2000 can receive feedback immediately while controls are in use:

Press **EDIT + STORE** on the BCR2000 to enter Global Edit mode ("EG").

Turn encoder 7 (in the top row) anticlockwise to change the value to zero (0).

Press **EXIT**.

- 4 Upload the *Behringer BCR2000 1.0.3 LC Xmu.mid* preset file to the controller. The preset file can be found in the *Controller support* folder inside the LC Xmu application folder.

Don't mess around trying to get Behringer's awful **BC-Edit** Java application to work reliably — download **Sysex Librarian** from Snoize at www.snoize.com/SysExLibrarian/ and use that to load the file and upload the BCR2000 preset. Note the selected preset on the BCR2000 will be overwritten when you upload, so choose an empty preset first.

- 5 In the LC Xmu Preferences window, choose **Behringer BCR2000** as the **Controller Type** for the first controller line. LC Xmu will automatically load the appropriate controller/host function map from the preferences folder, or from internal defaults if there is no pre-existing function map in preferences.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>	(no input)	(no controller)			
<input type="checkbox"/>	Fireface (89) Port 1	Behringer BCR2000			
<input type="checkbox"/>	BCR2000 Port 1	Doefer Pocket Dial			
<input type="checkbox"/>	BCR2000 Port 2	Generic controller			
		Generic MIDI mixer			
		JL Cooper CS-10			
		Korg KONTROL			
		Mackie Control			
		Novation Remote			

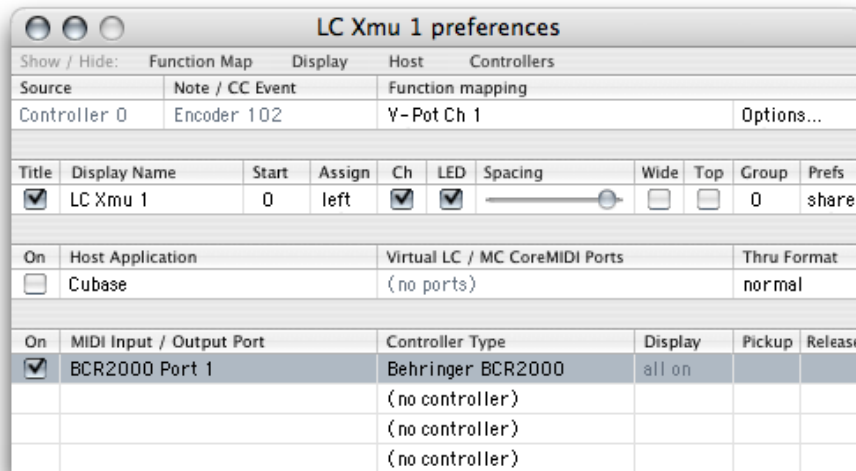
- 6 If connected via USB, choose **BCR2000 Port 1** (or just **BCR2000**) as the **MIDI Input/Output Port** for the controller. If connected via MIDI in/out cables, choose the appropriate port for your setup (see the note above regarding MIDI output port name). **Display** will be set automatically.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>	(no input)	Behringer BCR2000			
<input type="checkbox"/>	Fireface (89) Port 1	(no controller)			
<input type="checkbox"/>	BCR2000 Port 1	(no controller)			
<input type="checkbox"/>	BCR2000 Port 2	(no controller)			

- 7 Check the **On** checkbox for the controller.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	BCR2000 Port 1	Behringer BCR2000	all on		
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			

- 8 Move the top left encoder on the BCR2000 — the controller line should become selected, the **Function Map** section should display the **Source** controller, **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



BCR2000 setup is now complete.

What next?

See the [Reference Manual: Controllers: Behringer BCR2000](#) section for the default function mapping for each host application, encoder/LED functionality and BCR2000 preferences.

You may [setup additional controllers](#), or proceed to the next section, [Setting up your host](#).

Doepfer Pocket Dial

The **Doepfer Pocket Dial** module allows the Pocket Dial's true endless encoders to be assigned to LC Xmu **Faders**, **Vpots**, or **Jogwheel**, for jump-free, no-pickup operation without requiring MIDI feedback to the controller.

The Pocket Dial must be using preset 85–88, or a copy. The controller numbers for each dial may be changed if desired, but the format of the controller values must be unaltered to use the dials as emulated vpots. See the Pocket Dial manual instructions for selecting presets, and the manual appendix for details about the relative binary format used. The Pocket Dial manual is available from Doepfer's website: www.doepfer.de/pdf/pocketDial_man.pdf

Please read the [Setting up your controller](#) introduction before proceeding.

- 1 Select factory preset 86 on the Pocket Dial — Reaktor relative binary, CCs 16–31. LC Xmu provides a ready-made function map for these CC numbers.
- 2 In the LC Xmu Preferences window, choose **Doepfer Pocket Dial** as the **Controller Type** for the first controller line. LC Xmu will automatically load the appropriate controller/host function map from the preferences folder, or from internal defaults if there is no pre-existing function map in preferences. **Pickup** and **Release** will be set to default values automatically.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
		(no controller)			
		Behringer BCR2000			
		Doepfer Pocket Dial			
		Generic controller			
		Generic MIDI mixer			
		JL Cooper CS-10			
		Korg KONTROL			
		Mackie Control			
		Novation Remote			

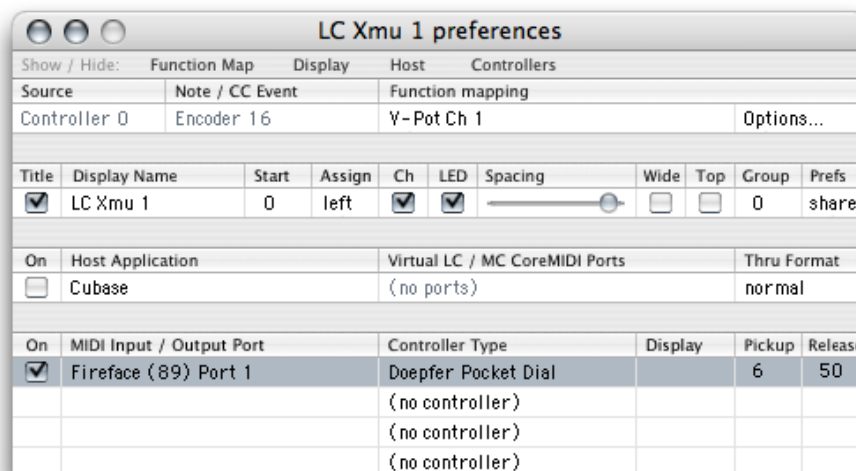
- 3 Choose the appropriate port as the **MIDI Input Port** from the controller. The screenshot below is an example, you should use the correct port for your setup.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
	(no input)	Doepfer Pocket Dial		6	50
	microKONTROL Port 1	(no controller)			
	microKONTROL Port 2	(no controller)			
	microKONTROL Port 3	(no controller)			
	Fireface (89) Port 1				

- 4 Check the **On** checkbox for the controller.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	Fireface (89) Port 1	Doepfer Pocket Dial		6	50
		(no controller)			
		(no controller)			
		(no controller)			

- 5 Move the top left dial on the Pocket Dial — the controller line should become selected, the **Function Map** section should display the **Source** controller, **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



By default, the top row of dials (CC 16–23) are mapped to **V-Pot Ch 1–8**, and the bottom row of knobs (CC 24–31) are mapped to **Fader Ch 1–8**. For effective LC/MC emulation, you will also need approximately 20 hardware buttons or MIDI keys mapped to appropriate LC/MC buttons. A second controller may be used to provide additional buttons or keys.

Pocket Dial setup is now complete.

What next?

See the [Reference Manual: Controllers: Doepfer Pocket Dial](#) section for Pocket Dial preferences.

You may [setup additional controllers](#), or proceed to the next section, [Setting up your host](#).

Fostex VM200

The **Fostex VM200** module supports true endless relative behaviour for the VM200's encoders, for jump-free, no-pickup operation. Endless encoder “acceleration” factor is emulated. Motorfader feedback is supported. Most of the VM200's buttons are supported for function mapping, and LED feedback is supported for 19 of the VM200 button LEDs. The VM200 data wheel is supported.

Note the VM200 does not have a “local off” mode — its controls **always** affect the internal digital mixer. LC Xmu uses the VM200's **9–16 ADAT IN** mixer page for LC/MC emulation, so the VM200's **1–8 ANALOG IN** and **17–20 EFF RTN** pages may still be used as a normal digital mixer. **Any ADAT inputs connected to the VM200 will be affected by use with LC Xmu.** ADAT outputs will be unaffected, so you can still route analog inputs to ADAT outputs.

Please read the [Setting up your controller](#) introduction before proceeding.

- 1 The controller requires a 2-way MIDI connection — input and output. LC Xmu does not provide a method to specify the MIDI output port for feedback to the controller. **LC Xmu assumes the controller output port has exactly the same name as the controller input port**, ie if your VM200 uses “MTP AV USB Port 4” for MIDI input, it must also be connected to “MTP AV USB Port 4” for MIDI output.

Alternately, in OS X **AudioMIDI Setup**, you may add a device named “VM200” and cable that to the appropriate MIDI interface input/output ports. This makes it possible to use different hardware MIDI port numbers or even different MIDI interfaces for VM200 input/output, because AudioMIDI Setup provides the device name to LC Xmu, regardless of the MIDI interface ports used.

- 2 **VM200 OS 1.07 is required** — The VM200 displays the OS version at the bottom of its LCD screen while booting. If you are running an earlier version of the OS, you must update it. To update the VM200 OS:

Ensure the VM200 is set to respond to incoming sysex:

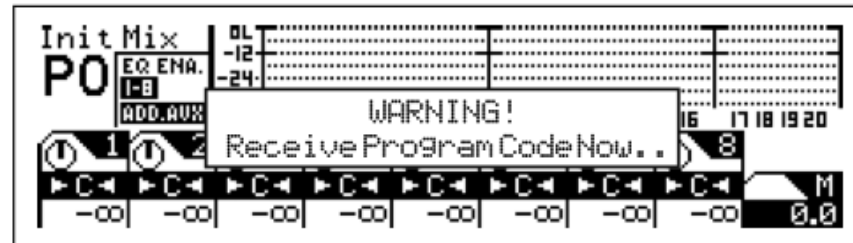
Press **SETUP:MIDI** button repeatedly until the **1:MIDI TX&RX** tab is visible in the LCD.

Turn Pan encoder 7 to set **SYSTEM EX: TX&RX** to **ON**.

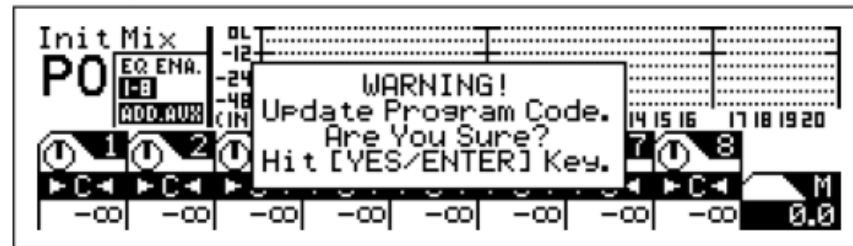
Turn Pan encoder 8 to set the **DEVICE ID** to **000**.

Upload the `Fostex_VM200_V107.mid` OS software updater file to the controller's MIDI-in port using **Sysex Librarian**, available from Snoize at www.snoize.com/SysExLibrarian/. The updater is a standard MIDI file, and can be found in the *Controller support* folder inside the LC Xmu application folder.

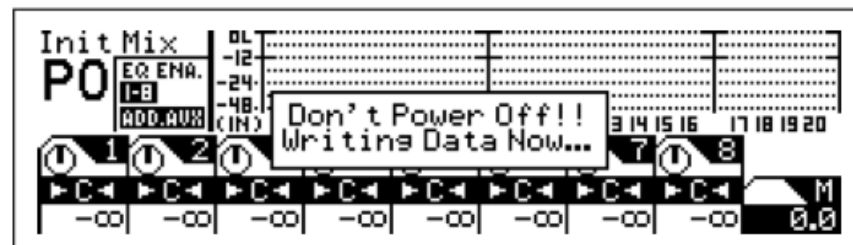
When the VM200 begins to receive the software update sysex, it is automatically put into software update mode. When receiving the software update sysex, the VM200 LCD window displays this message:



When the software update sysex has been fully received, this message will appear on the VM200 LCD window:



If you wish to abort the update, press the **EXIT** key. To proceed, press the **ENTER** key — writing software update data to the internal EPROM will begin. This message will be displayed on the VM200 LCD window:



Do not turn off or interrupt the power, or booting the VM200 will not be possible. If the power is mistakenly turned off while writing, the internal EPROM data will be corrupted, and the VM200 will require hardware servicing to restore the EPROM data.

When the above message disappears, software updating is completed. Reboot the VM200 to check the new OS version, displayed on the LCD window at boot.

- 3 Upload the supplied *Fostex VM200 LC Xmu.mid* file, found in the *Controller support* folder, to the controller's MIDI-in port using **Sysex Librarian**. This sets up the VM200 MIDI settings and Control Change table for use with LC Xmu. **Warning: the User Control Change Table will be overwritten.** You may wish to save your current VM200 setup to Sysex Librarian first.
- 4 In the LC Xmu Preferences window, choose **Fostex VM200** as the **Controller Type** for the first controller line. LC Xmu will automatically load the appropriate controller/host function map from the preferences folder, or from internal defaults if there is no pre-existing function map in preferences.

On	MIDI Input / Output Ports	Controller Type	Display	Pickup	Release
		(no controller)			
		Behringer BCR2000			
		Doepfer Pocket Dial			
		Fostex VM200			
		Generic controller			
		Generic feedback			
		Generic MIDI mixer			
		JL Cooper CS-10			
		Korg KONTROL			
		Mackie Control			
		Novation Remote			

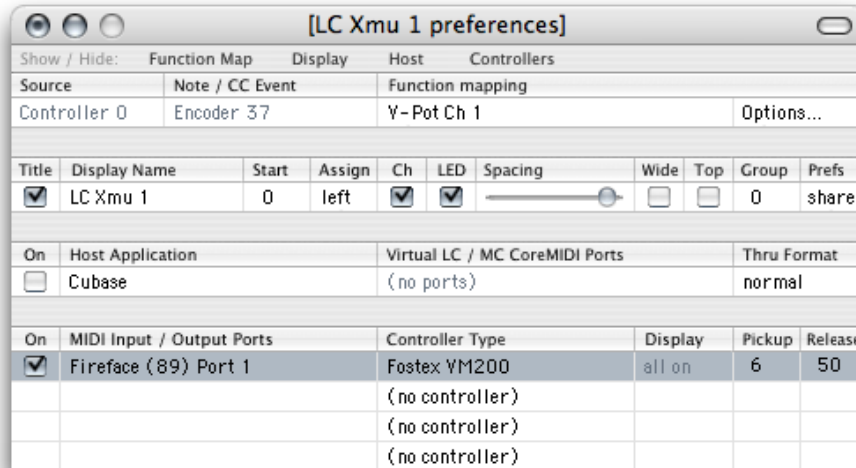
- 5 Choose the appropriate **MIDI Input/Output Port** for your setup (see the note above regarding MIDI output port name). **Display, Pickup** and **Release** will be set automatically.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
	(no input)	Fostex VM200	all on	6	50
	microKONTROL Port 1	(no controller)			
	microKONTROL Port 2	(no controller)			
	microKONTROL Port 3	(no controller)			
	Fireface (89) Port 1				

- 6 Check the **On** checkbox for the controller. LC Xmu will switch the VM200 to the **9-16 ADAT IN** mixer page, and send feedback to the motorfaders and LEDs (all off).

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	Fireface (89) Port 1	Fostex VM200	all on	6	50
		(no controller)			
		(no controller)			
		(no controller)			

- 7 Move the leftmost Pan encoder on the VM200 — the controller line should become selected, the **Function Map** section should display the **Source** controller, **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



VM200 setup is now complete.

What next?

See the [Reference Manual: Controllers: Fostex VM200](#) section for the default function mapping for each host application, motorfader/encoder/LED functionality and VM200 preferences.

You may [setup additional controllers](#), or proceed to the next section, [Setting up your host](#).

Generic controller

The **Generic controller** module may be used for any controller sending standard 7-bit MIDI note or CC messages, using a **different note or CC number for each control**. Examples include M-Audio, Edirol, Evolution and Kenton keyboards and controllers, various Yamaha, Tascam, Korg and Fostex digital mixers, etc. If your specific controller is not listed among the **Controller Type** menu choices, does not offer hardware emulation of one of those choices, and does not use feedback for motorfaders and/or LEDs, you should try **Generic controller**.

If your controller sends multiple channels of fixed CC messages (for example eight channels of CC7/CC10 volume/pan on MIDI channels 1-8), and cannot be remapped, you should try the [Generic MIDI mixer](#) controller type.

Please read the [Setting up your controller](#) introduction before proceeding.

- 1 In the LC Xmu Preferences window, choose **Generic controller** as the **Controller Type** for the first controller line. **Pickup** and **Release** will be set to default values automatically.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>	(no input)	(no controller)			
<input type="checkbox"/>		Behringer BCR2000			
<input type="checkbox"/>		Doepfer Pocket Dial			
<input type="checkbox"/>		Generic controller			
<input type="checkbox"/>		Generic MIDI mixer			
<input type="checkbox"/>		JL Cooper CS-10			
<input type="checkbox"/>		Korg KONTROL			
<input type="checkbox"/>		Mackie Control			
<input type="checkbox"/>		Novation Remote			

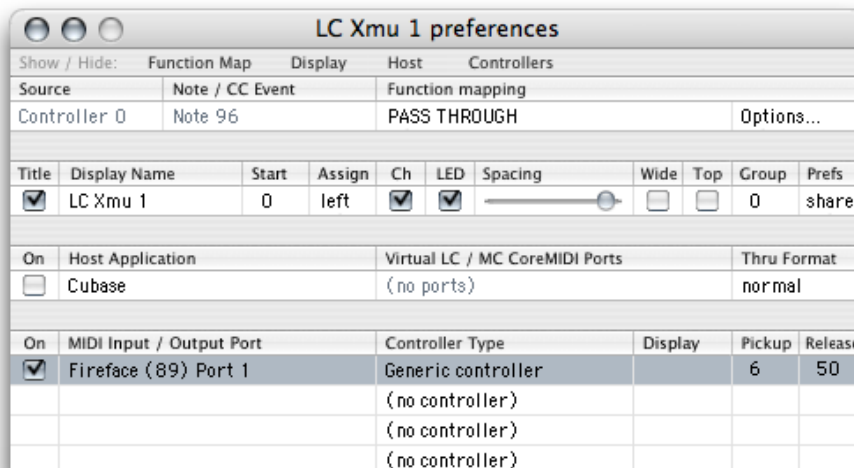
- 2 Choose the appropriate port as the **MIDI Input Port** from the controller. The screenshot below is an example, you should use the correct port for your setup.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>	(no input)	Generic controller		6	50
<input type="checkbox"/>	microKONTROL Port 1	(no controller)			
<input type="checkbox"/>	microKONTROL Port 2	(no controller)			
<input type="checkbox"/>	microKONTROL Port 3	(no controller)			
<input type="checkbox"/>	Fireface (89) Port 1				

- 3 Check the **On** checkbox for the controller.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	Fireface (89) Port 1	Generic controller		6	50
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			

- 4 Move or press any CC or note control or key on your controller — the controller line should become selected, the **Function Map** section should display the **Source** controller, **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



Controller setup is now complete.

What next?

Due to the many possible combinations of generic hardware control configurations, presets/templates and note/CC messages, a basic pre-built function map is supplied as a starting point. You will probably need to edit the default function map to suit your controller and host application. See the [Reference Manual: Controllers: Generic controller](#) section for details.

You may [setup additional controllers](#), or proceed to the next section, [Setting up your host](#).

Generic feedback

The **Generic controller** module may be used for any feedback-capable controller sending standard 7-bit MIDI note or CC messages, using a **different note or CC number for each control**. Examples include various Yamaha, Tascam, Behringer and Fostex digital mixers, the Behringer BCF2000, etc. If your specific controller is not listed among the **Controller Type** menu choices, does not offer hardware emulation of one of those choices, and can make use of feedback for motorfaders and/or LEDs, you should try **Generic feedback**.

Please read the [Setting up your controller](#) introduction before proceeding.

- 1 The controller requires a 2-way MIDI connection — input and output. LC Xmu does not provide a method to specify the MIDI output port for feedback to the controller. By default, for feedback to work with the controller, **LC Xmu assumes the controller output port has exactly the same name as the controller input port**, ie if your controller uses "MTP AV USB Port 4" for MIDI input, it must also be connected to "MTP AV USB Port 4" for MIDI output.

Alternately, in OS X **AudioMIDI Setup**, you may add a new device and cable that to the appropriate MIDI interface input/output ports. This makes it possible to use different hardware MIDI port numbers or even different MIDI interfaces for controller input/output — AudioMIDI Setup provides the device name to LC Xmu, regardless of the MIDI interface ports used.

- 2 In the LC Xmu Preferences window, choose **Generic feedback** as the **Controller Type** for the first controller line. **Pickup** and **Release** will be set to default values automatically.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
		(no controller)			
		Behringer BCR2000			
		Doefer Pocket Dial			
		Generic controller			
		Generic feedback			
		Generic MIDI mixer			
		JL Cooper CS-10			
		Korg KONTROL			
		Mackie Control			
		Novation Remote			

- 3 Choose the appropriate port as the **MIDI Input/Output Port** for the controller (see the note above regarding MIDI output port name). The screenshot below is an example, you should use the correct port for your setup.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
	(no input)	Generic feedback		6	50
	microKONTROL Port 1	(no controller)			
	microKONTROL Port 2	(no controller)			
	microKONTROL Port 3	(no controller)			
	Fireface (89) Port 1				

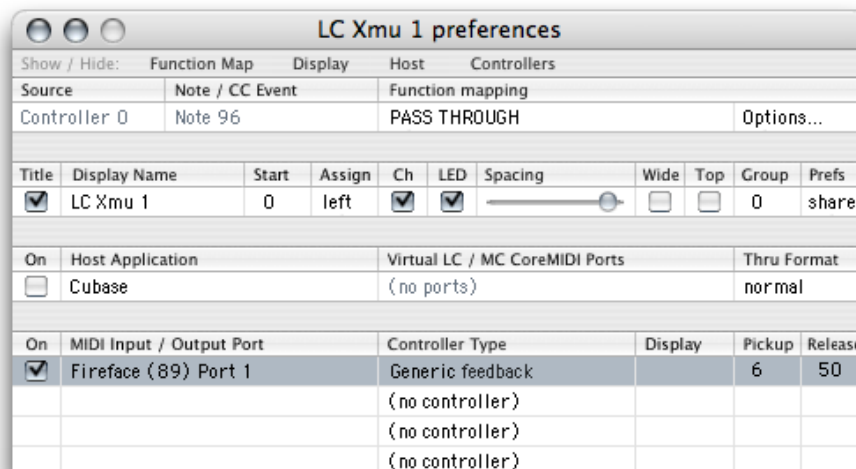
SETTING UP YOUR
CONTROLLER

Generic feedback

- 3 Check the **On** checkbox for the controller.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	Fireface (89) Port 1	Generic feedback		6	50
		(no controller)			
		(no controller)			
		(no controller)			

- 4 Move or press any CC or note control or key on your controller — the controller line should become selected, the **Function Map** section should display the **Source** controller, **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



Controller setup is now complete.

What next?

Due to the many possible combinations of generic hardware control configurations, presets/templates and note/CC messages, a basic pre-built function map is supplied as a starting point. You will probably need to edit the default function map to suit your controller and host application.

See the [Reference Manual: Controllers: Generic feedback](#) section for default function mapping, feedback functionality and controller preferences.

You may [setup additional controllers](#), or proceed to the next section, [Setting up your host](#).

Generic MIDI mixer

The **Generic MIDI mixer** module may be used for any controller sending multiple channels of fixed CC messages (for example eight channels of CC7/CC10 volume/pan on MIDI channels 1-8), where you cannot reassign the controller to send a different CC number for each control. Examples include the JL Cooper Faderbaby.

Please read the [Setting up your controller](#) introduction before proceeding.

- 1 In the LC Xmu Preferences window, choose **Generic MIDI mixer** as the **Controller Type** for the first controller line. **Pickup** and **Release** will be set to default values automatically.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		Behringer BCR2000			
<input type="checkbox"/>		Doepfer Pocket Dial			
<input type="checkbox"/>		Generic controller			
<input type="checkbox"/>		Generic MIDI mixer			
<input type="checkbox"/>		JL Cooper CS-10			
<input type="checkbox"/>		Korg KONTROL			
<input type="checkbox"/>		Mackie Control			
<input type="checkbox"/>		Novation Remote			

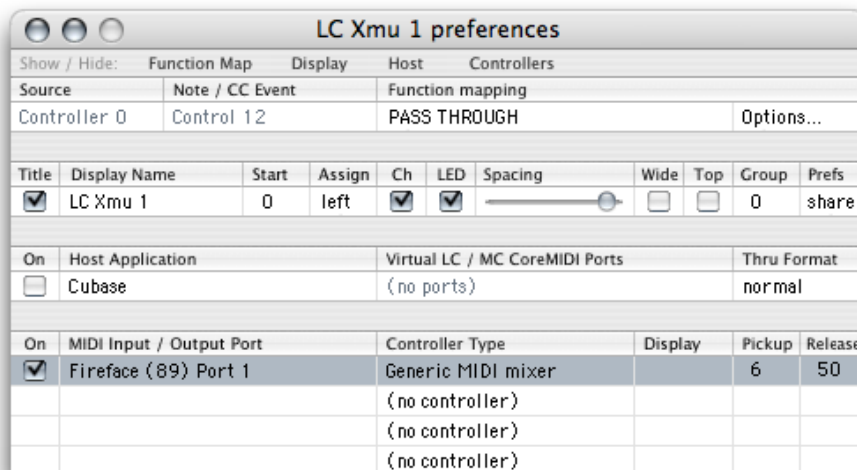
- 2 Choose the appropriate port as the **MIDI Input Port** from the controller. The screenshot below is an example, you should use the correct port for your setup.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>	(no input)	Generic MIDI mixer		6	50
<input type="checkbox"/>	microKONTROL Port 1	(no controller)			
<input type="checkbox"/>	microKONTROL Port 2	(no controller)			
<input type="checkbox"/>	microKONTROL Port 3	(no controller)			
<input type="checkbox"/>	Fireface (89) Port 1				

- 3 Check the **On** checkbox for the controller.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	Fireface (89) Port 1	Generic MIDI mixer		6	50
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			

- 4 Move the channel 1 volume fader or knob on your controller — the controller line should become selected, the **Function Map** section should display the **Source** controller, remapped **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



Controller setup is now complete.

What next?

LC Xmu is not channel-sensitive — it does not distinguish between the same CC or note number on different MIDI channels. When using **Generic MIDI mixer**, each fixed/channelized CC number may be remapped at input to a unique CC number so LC Xmu can separate the controls. By default, only CC7 (volume) and CC10 (pan) are remapped. Other CC numbers can be remapped by manually editing the controller preferences file.

Due to the many possible combinations of generic hardware control configurations and note/CC messages, a basic pre-built LC Xmu function map is supplied as a starting point. You will probably need to edit the default function map to suit your controller and host application.

See the [Reference Manual: Controllers: Generic MIDI mixer](#) section for default function mapping and CC input remapping preferences.

You may [setup additional controllers](#), or proceed to the next section, [Setting up your host](#).

JL Cooper CS-10

The **JL Cooper CS-10** module provides support for the CS-10 endless wheel encoder, and for feedback to the various CS-10 LEDs.

Please read the [Setting up your controller](#) introduction before proceeding.

- 1 The CS-10 requires a 2-way MIDI connection — input and output. LC Xmu does not provide a method to specify the MIDI output port for feedback to the controller. By default, for LED feedback to work with the CS-10, **LC Xmu assumes the controller output port has exactly the same name as the controller input port**, ie if your CS-10 uses "MTP AV USB Port 4" for MIDI input, it must also be connected to "MTP AV USB Port 4" for MIDI output.

Alternately, in OS X **AudioMIDI Setup**, you may add a device named "JL Cooper CS-10" and cable that to the appropriate MIDI interface input/output ports. This makes it possible to use different hardware MIDI port numbers or even different MIDI interfaces for CS-10 input/output, because AudioMIDI Setup provides the device name to LC Xmu, regardless of the midi interface ports used.

- 2 In the LC Xmu Preferences window, choose **JL Cooper CS-10** as the **Controller Type** for the first controller line. LC Xmu will automatically load the appropriate controller/host function map from the preferences folder, or from internal defaults if there is no pre-existing function map in preferences. **Pickup** and **Release** will be set to default values automatically.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
		(no controller)			
		Behringer BCR2000			
		Doepfer Pocket Dial			
		Generic controller			
		Generic MIDI mixer			
		JL Cooper CS-10			
		Korg KONTROL			
		Mackie Control			
		Novation Remote			

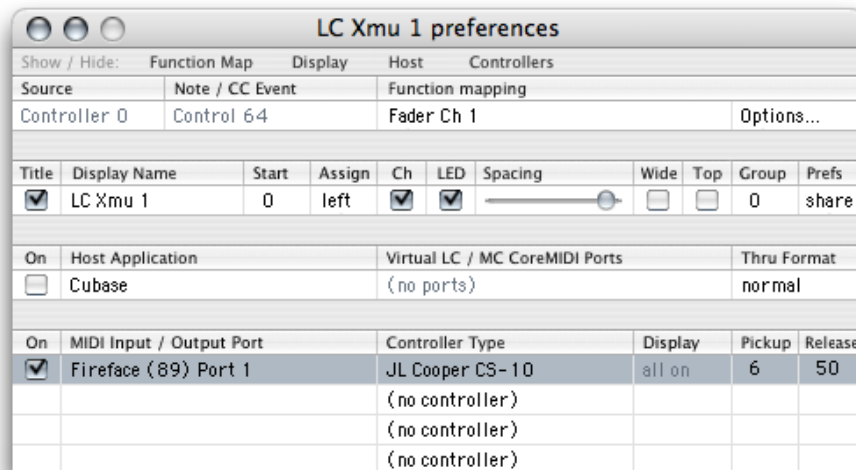
- 3 Choose the appropriate port as the **MIDI Input/Output Port** for the CS-10 (see the note above regarding MIDI output port name). **Display** will be set automatically. The screenshot below is an example, you should use the correct port for your setup.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
	(no input)	JL Cooper CS-10		6	50
	microKONTROL Port 1	(no controller)			
	microKONTROL Port 2	(no controller)			
	microKONTROL Port 3	(no controller)			
	Fireface (89) Port 1				

- 4 Check the **On** checkbox for the controller.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	Fireface (89) Port 1	JL Cooper CS-10	all on	6	50
		(no controller)			
		(no controller)			
		(no controller)			

- 5 Move the channel 1 volume fader on the CS-10 — the controller line should become selected, the **Function Map** section should display the **Source** controller, **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



CS-10 setup is now complete.

What next?

See the [Reference Manual: Controllers: JL Cooper CS-10](#) section for the default function mapping for each host application, LED display mapping and CS-10 preferences.

You may [setup additional controllers](#), or proceed to the next section, [Setting up your host](#).

Korg KONTROL

The **Korg KONTROL** module supports “Native Korg Mode” for both the Korg microKONTROL and the Korg KONTROL49. **The controller must be connected using USB, not via MIDI cables.**

Please read the [Setting up your controller](#) introduction before proceeding.

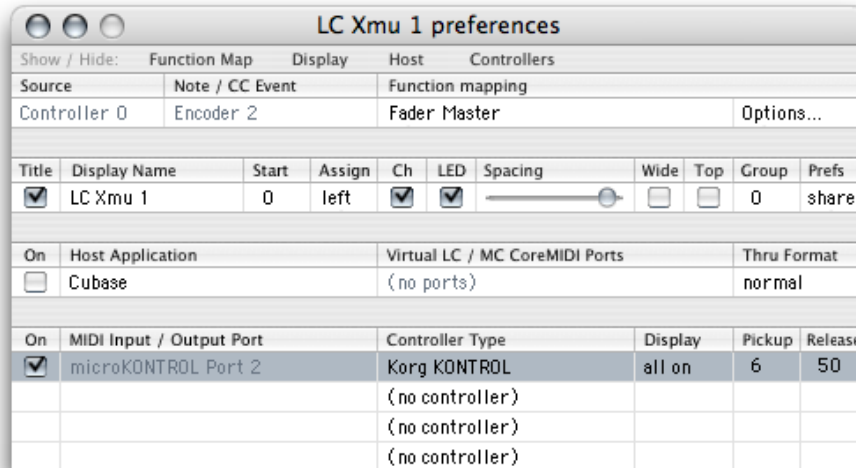
- 1 In the LC Xmu Preferences window, choose **Korg KONTROL** as the **Controller Type** for the first controller line. LC Xmu will put the KONTROL into native mode, and initialize its LCD screens and controls. The appropriate KONTROL MIDI port will automatically be selected as the LC Xmu **MIDI Input/Output Port**. LC Xmu will automatically load the appropriate controller/host function map from preferences, or from defaults if there is no appropriate function map in preferences. **Display, Pickup** and **Release** will automatically be set to default values. Controller initialization may take a few seconds — please be patient.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		Behringer BCR2000			
<input type="checkbox"/>		Doefer Pocket Dial			
<input type="checkbox"/>		Generic controller			
<input type="checkbox"/>		Generic MIDI mixer			
<input type="checkbox"/>		JL Cooper CS-10			
<input type="checkbox"/>		Korg KONTROL			
<input type="checkbox"/>		Mackie Control			
<input type="checkbox"/>		Novation Remote			

- 2 Check the **On** checkbox for the controller.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	microKONTROL Port 2	Korg KONTROL	all on	6	50
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			

- 3 Move the main endless encoder on the KONTROL — the controller line should become selected, the **Function Map** section should display the **Source** controller, **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



USING THE KONTROL WITH LOGIC 7.1+

Logic versions 7.1 and higher include built-in native-mode support for the KONTROL — this does not offer LC Xmu's full passthrough, assignability or access to all the emulated LC/MC's abilities.

Unfortunately Logic is **very** aggressive about grabbing the KONTROL at every startup and every controller re-scan, forcing it into Logic's native mode. You can force-exit Logic native mode on the KONTROL by pressing the **scene + setting + message + exit** buttons simultaneously, then re-enter native mode for LC Xmu by pressing the lowest 3 keys (transposed all the way down) simultaneously. Note that Logic will grab the KONTROL again the next time it scans control surfaces.

To permanently disable Logic's grabbing of the KONTROL:

Find the Logic application, Control-click the icon, and choose "show package contents" from the contextual menu. Remove the file *Korg microKONTROL.bundle* from the */Contents/MIDI Device Plugins/* folder inside the application package. Don't delete it — move it somewhere else in case you want it back.

Delete the global Logic Control Surfaces preferences file at *~/Library/Preferences/Logic/com.apple.logic.pro.cs* (or *com.apple.logic.express.cs*) so Logic will not attempt to load the cached controller at next startup.

Note you can still use the KONTROL as a generic controller in Logic if you have removed the microKONTROL bundle.

KONTROL setup is now complete.

What next?

See the [Reference Manual: Controllers: Korg KONTROL](#) section for details of the default function mapping for each host application, preferences, and in-depth discussion of display and bypass options.

You may wish to try setting the **Pickup** value lower than the default of 6, as the KONTROL does not skip many values during fast fader moves. Try a value of 3 or 4. See the [Reference Manual: Preferences: Controllers](#) section for more detail.

You may [setup additional controllers](#) or proceed to the next section, [Setting up your host](#).

Mackie Control

The **Mackie Control** module allows you to use LC Xmu to manage the Mackie Control, for on-the-fly host-switching with saved states and no conflict, control remapping, controller splitting and generic user-configurable note/CC passthrough. Full 2-way communication is supported, including feedback that LC Xmu does not display — V-Pot LEDs, SMPTE/Bars display, channel signal-present LEDs, and LCD metering modes.

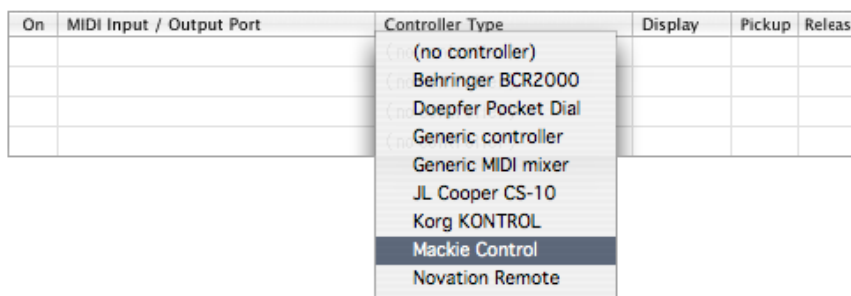
Any controller that emulates a Logic Control or Mackie Control in hardware may be used with this module, for example the Behringer BCF2000, Tascam US-/FW-/DM- series, etc. If you have the original Logic Control, you must boot the Logic Control into Mackie Control mode for the LCD display to work — update to firmware 1.02, available free from www.mackie.com/products/mcu/mcu_upgrade.html.

Please read the [Setting up your controller](#) introduction before proceeding.

- 1 The Mackie Control requires a 2-way MIDI connection — input and output. LC Xmu does not provide a method to specify the MIDI output port for feedback to the controller. By default, for LED feedback to work with the Mackie Control, **LC Xmu assumes the controller output port has exactly the same name as the controller input port**, ie if your Mackie Control uses "MTP AV USB Port 4" for MIDI input, it must also be connected to "MTP AV USB Port 4" for MIDI output.

Alternately, in OS X **AudioMIDI Setup**, you may add a device named "Mackie Control" and cable that to the appropriate MIDI interface input/output ports. This makes it possible to use different hardware MIDI port numbers or even different MIDI interfaces for Mackie Control input/output, because AudioMidi Setup provides the device name to LC Xmu, regardless of the MIDI interface ports used.

- 2 In the LC Xmu Preferences window, choose **Mackie Control** as the **Controller Type** for the first controller line. LC Xmu will automatically load the appropriate controller/host function map from the preferences folder, or from internal defaults if there is no pre-existing function map in preferences.



SETTING UP YOUR
CONTROLLER

Mackie Control

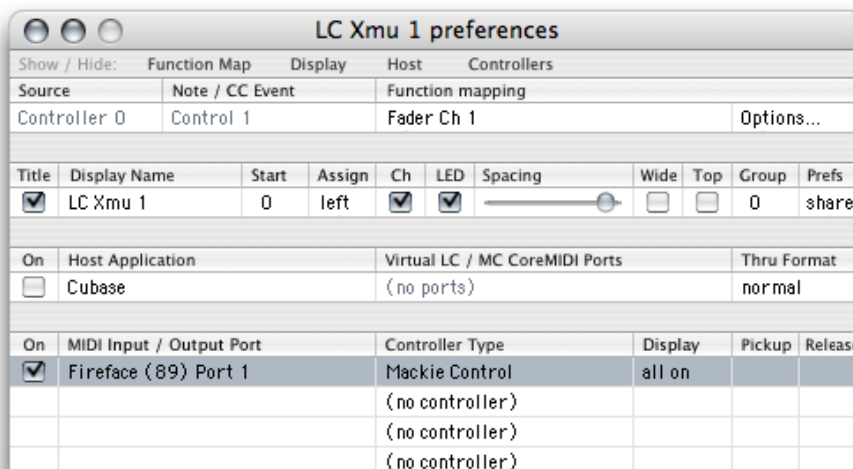
- 3 Choose the appropriate port as the **MIDI Input/Output Port** from the Mackie Control (see the note above regarding MIDI output port name). **Display** will be set automatically. The screenshot below is an example, you should use the correct port for your setup.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>	(no input)	Mackie Control			
<input type="checkbox"/>	microKONTROL Port 1	(no controller)			
<input type="checkbox"/>	microKONTROL Port 2	(no controller)			
<input type="checkbox"/>	microKONTROL Port 3	(no controller)			
<input checked="" type="checkbox"/>	Fireface (89) Port 1				

- 4 Check the **On** checkbox for the controller.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	Fireface (89) Port 1	Mackie Control	all on		
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			
<input type="checkbox"/>		(no controller)			

- 5 Move the channel 1 volume fader on the Mackie Control — the controller line should become selected, the **Function Map** section should display the **Source** controller, **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



USING THE MACKIE CONTROL WITH LOGIC 7.1+

Logic 7.1 and higher include support for Mackie Control mode as part of the Logic Control support.

Unfortunately Logic is **very** aggressive about grabbing the Mackie Control at every startup, forcing it into Logic's native-mode. Deleting the surface from Logic's Control Surfaces Setup window will force the Mackie Control offline, rendering it inactive for LC Xmu. Power-cycling the Mackie Control so LC Xmu can see it again will cause Logic to grab it again, and so on.

The simplest solution is to simply unplug a midi cable from the Mackie Control when starting Logic (or when booting the Mackie Control with Logic running), which will prevent Logic finding it. Remember to plug the cable back in again.

An alternate solution is to use the earlier Logic 7.0.1 Logic Control bundle, which does not recognize the Mackie Control mode:

Find the Logic 7.1 application, control-click the icon, and choose "show package contents" from the contextual menu. Find the file *Logic Control.bundle* in the */Contents/MIDI Device Plugins/* folder inside the application package. Don't delete it — move it somewhere else in case you want it back.

Find the file *Logic Control.bundle* in the */Contents/MIDI Device Plugins/* folder inside the Logic 7.0.1 application package. Copy this file into the same location in the Logic 7.1 application package.

Note that using the 7.0.1 control surface bundle will result in slightly reduced functionality, mainly with control of onscreen Logic dialog boxes.

Another possible solution is to use [MIDIPIPE's](#) "hijack" ability to hide the controller hardware input port from Logic — do this after starting LC Xmu (so the port is not hidden from LC Xmu), but before starting Logic. See the MIDIPIPE manual for details.

Mackie Control setup is now complete.

What next?

See the [Reference Manual: Controllers: Mackie Control](#) section for details of the Mackie Control support, including user-configurable bypass operation.

You may [setup additional controllers](#) or proceed to the next section, [Setting up your host](#).

Novation Remote

The **Novation Remote** module supports the Remote series and variations (excluding the Remote SL series), providing emulation of endless encoder acceleration factor for the Remote encoders. The eight endless encoders may be assigned to LC Xmu **Faders**, **Vpots**, or **Jogwheel**, for jump-free, no-pickup operation.

Please read the [Setting up your controller](#) introduction before proceeding.

- 1 Use the **Remote Template Editor** application to upload the supplied *Novation Remote LC Xmu.syx* template file to the controller. The template file can be found in the *Controller support* folder inside the LC Xmu application folder. The **Remote Template Editor** application is available from Novation's website at www.novationmusic.com/downloads.asp?productid=2&type=1
- 2 In the LC Xmu Preferences window, choose **Novation Remote** as the **Controller Type** for the first controller line. **Pickup** and **Release** will be set to default values automatically.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>	(no input)	(no controller)			
<input type="checkbox"/>		Behringer BCR2000			
<input type="checkbox"/>		Doepfer Pocket Dial			
<input type="checkbox"/>		Generic controller			
		Generic MIDI mixer			
		JL Cooper CS-10			
		Korg KONTROL			
		Mackie Control			
		Novation Remote			

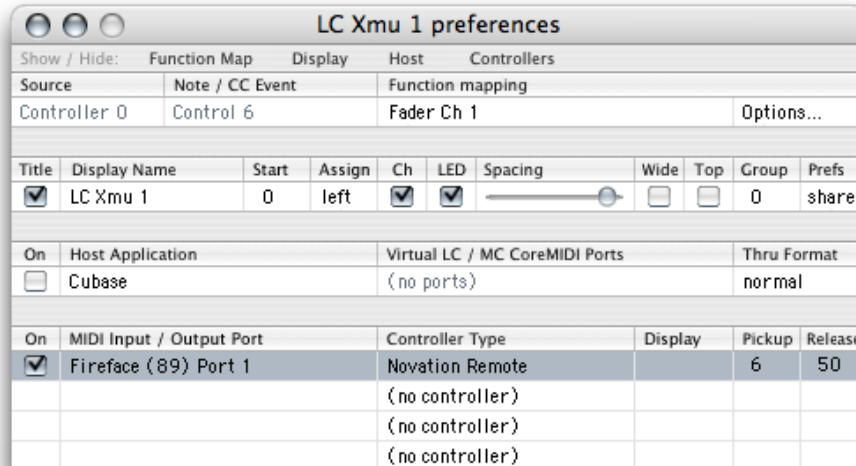
- 2 Choose the appropriate port as the **MIDI Input Port** from the controller. The screenshot below is an example, you should use the correct port for your setup.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input type="checkbox"/>	(no input)	Novation Remote		6	50
<input type="checkbox"/>	microKONTROL Port 1	(no controller)			
<input type="checkbox"/>	microKONTROL Port 2	(no controller)			
<input type="checkbox"/>	microKONTROL Port 3	(no controller)			
	Fireface (89) Port 1				

- 3 Check the **On** checkbox for the controller.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	Fireface (89) Port 1	Novation Remote		6	50
		(no controller)			
		(no controller)			
		(no controller)			

- 4 Move Fader 1 on the Remote — the controller line should become selected, the **Function Map** section should display the **Source** controller, **Note/CC Event** and **Function Mapping** for that control, and the **Options** menu should become available.



Remote setup is now complete.

What next?

See the [Reference Manual: Controllers: Novation Remote](#) section for the default function mapping for each host application and Remote preferences.

You may [setup additional controllers](#), or proceed to the next section, [Setting up your host](#).

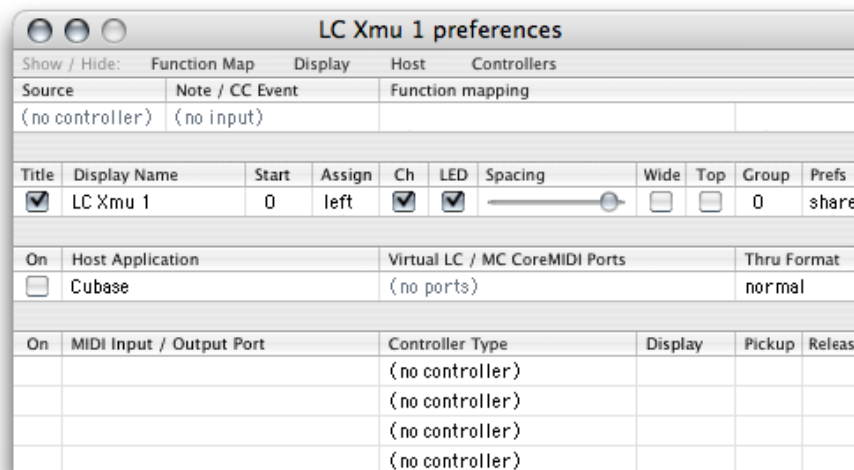
Setting up your host

Please ensure that your controller and host application are working correctly before attempting to use the controller with LC Xmu. Any hardware, connection, driver, software or other problems should be diagnosed and corrected before proceeding. If your controller, OS or application is misbehaving, LC Xmu won't magically make it better.

IMPORTANT — quit all MIDI applications before proceeding any further. LC Xmu creates virtual CoreMIDI ports when enabling a host. Other applications (especially Logic and Cubase) may not handle this gracefully.

Please ensure you have successfully setup your hardware controller for use with LC Xmu. See the [Setting up your controller](#) section.

LC Xmu should be running. Open the LC Xmu **Preferences** window.



Click the appropriate line below to go to specific setup instructions for your host application.

[Ableton Live](#)

[Apple Final Cut](#)

[Apple Soundtrack](#)

[Apple/Emagic Logic](#)

[Propellerheads Reason](#)

[RME TotalMix](#)

[Steinberg Cubase/Nuendo](#)

Ableton Live

Live 5.0 or higher is required for Mackie Control support. LC Xmu does not support earlier versions of Live, which do not support the Mackie Control.

Please read the [Setting up your host](#) introduction before proceeding.

- 1 In the LC Xmu Preferences window, choose **Live** as the **Host Application**.

On	Cubase	Virtual LC / MC CoreMIDI Ports	Thru Format
<input type="checkbox"/>	Live	(no ports)	normal
	Logic		
	Reason		
	TotalMix		

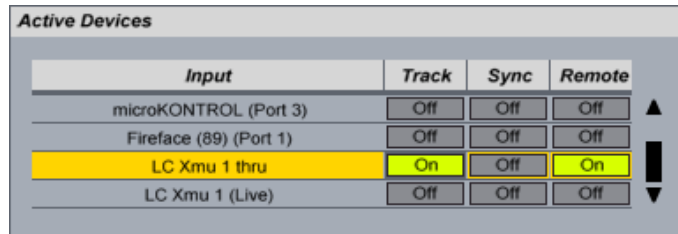
- 2 Check the **On** checkbox. LC Xmu will create virtual CoreMIDI source and destination ports — these are the ports Live will use to communicate with the emulated Mackie Control.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input checked="" type="checkbox"/>	Live	LC Xmu 1 (Live)	normal

- 3 Close the LC Xmu Preferences window and leave LC Xmu running. Start Live. When Live has started, choose **Preferences** from the **Live** menu. Select the **MIDI/Sync** tab in the Live Preferences window.
- 4 Add a Mackie Control to the **Remote Control Surfaces** section as shown. The input and output ports you should select for the Mackie Control are the LC Xmu virtual CoreMIDI source and destination ports created in step 2.

Remote Control Surfaces		
Control Surface	Input	Output
MackieControl ▾	LC Xmu 1 (Live) ▾	LC Xmu 1 (Live) ▾
None ▾	None ▾	None ▾
None ▾	None ▾	None ▾

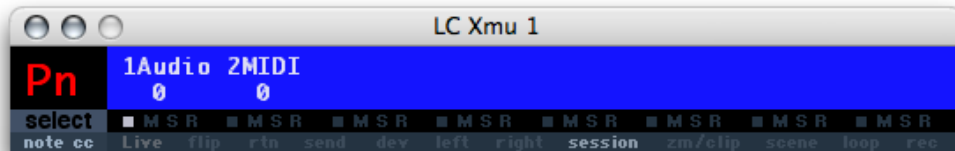
- 5 Optional — set up the **Active Devices** section:



IMPORTANT — do not enable the hardware input port for your controller. Doing so will cause Live to see both a Mackie Control event and the controller source event, which is not what you want.

If you wish to use spare or bypassed controls or keys on your controller as input for Live tracks, or as Live Remote commands, you should enable the appropriate items **for the LC Xmu passthrough port — LC Xmu 1 thru** — as shown. If your entire controller will always be used as an emulated Mackie Control, you do not need to enable the LC Xmu passthrough port.

- 6 Close the Live Preferences window and switch to LC Xmu. Live should now be communicating with the emulated Mackie Control — with the default “untitled” Live session open, the LC Xmu display will look like this:



Live setup for LC Xmu is now complete.

What next?

For details of the Mackie Control support in Live (how to use your emulated MC), see the **Live manual** — chapter 22, *Mackie Control*.

See the [Reference Manual: Hosts: Ableton Live](#) section for details of the LC Xmu host implementation for Live. See the [Reference Manual: Controllers](#) section for your controller for the default function mappings for Live.

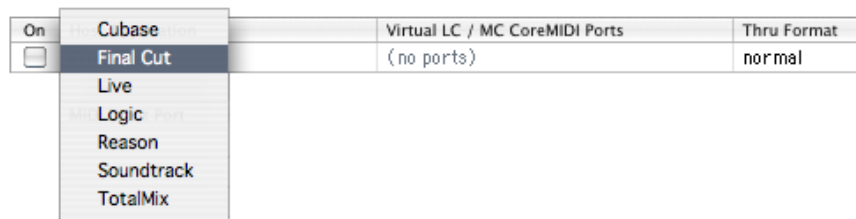
You may [setup other host applications](#) you wish to use, or proceed to the next section, [Introduction to LC Xmu](#).

Apple Final Cut

Final Cut 5.0 or higher is required for Mackie Control support. LC Xmu does not support earlier versions of Final Cut, which do not support the Mackie Control.

Please read the [Setting up your host](#) introduction before proceeding.

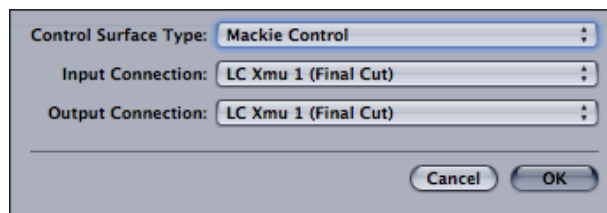
- 1 In the LC Xmu Preferences window, choose **Final Cut** as the **Host Application**.



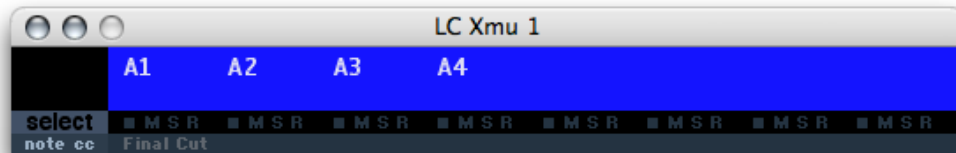
- 2 Check the **On** checkbox. LC Xmu will create virtual CoreMIDI source and destination ports — these are the ports Final Cut will use to communicate with the emulated Mackie Control.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input checked="" type="checkbox"/>	Final Cut	LC Xmu 1 (Final Cut)	normal

- 3 Close the LC Xmu Preferences window and leave LC Xmu running. Start Final Cut. When Final Cut has started, choose **Control Surfaces...** from the **Tools** menu.
- 4 Click the **+** button and add a Mackie Control as shown. The input and output connections you should select for the Mackie Control are the LC Xmu virtual CoreMIDI source and destination ports created in step 2.



- 6 Click OK. A Mackie Control icon will be added to the Control Surfaces window. Click OK again to close the Control Surfaces window, and switch to LC Xmu. Final Cut should now be communicating with the emulated Mackie Control — with the default “Untitled” Final Cut project open, the LC Xmu display will look like this:



Final Cut setup for LC Xmu is now complete.

What next?

For details of the Mackie Control support in Final Cut, **see the Final Cut manual** — volume III, part I, *Using the Audio Mixer: Using a Control Surface With the Audio Mixer*.

Note that the emulated Mackie Control may only be active when Final Cut is the foreground application and the Audio Mixer window is open.

See the [Reference Manual: Hosts: Apple Final Cut](#) section for details of the LC Xmu host implementation for Final Cut. See the [Reference Manual: Controllers](#) section for your controller for the default function mappings for Final Cut.

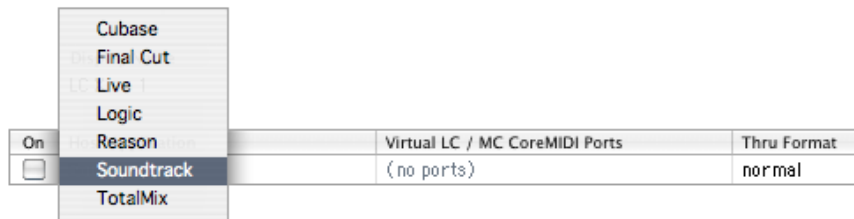
You may [setup other host applications](#) you wish to use, or proceed to the next section, [Introduction to LC Xmu](#).

Apple Soundtrack

Soundtrack Pro 1.0 or higher is required for Mackie Control support. LC Xmu does not support earlier versions of Soundtrack, which do not support the Mackie Control.

Please read the [Setting up your host](#) introduction before proceeding.

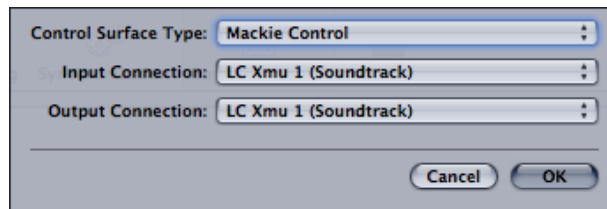
- 1 In the LC Xmu Preferences window, choose **Soundtrack** as the **Host Application**.



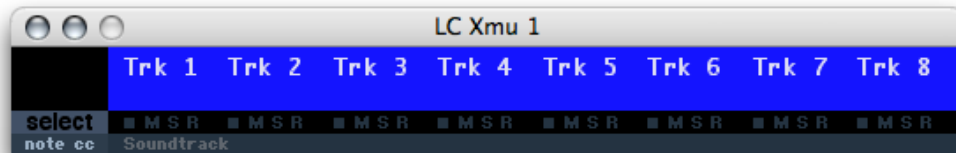
- 2 Check the **On** checkbox. LC Xmu will create virtual CoreMIDI source and destination ports — these are the ports Soundtrack will use to communicate with the emulated Mackie Control.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input checked="" type="checkbox"/>	Soundtrack	LC Xmu 1 (Soundtrack)	normal

- 3 Close the LC Xmu Preferences window and leave LC Xmu running. Start Soundtrack. When Soundtrack has started, choose **Preferences...** from the **Soundtrack Pro** menu. Select the **Control Surfaces** icon at the top of the Preferences window.
- 4 Click the **+** button and add a Mackie Control as shown. The input and output connections you should select for the Mackie Control are the LC Xmu virtual CoreMIDI source and destination ports created in step 2.



- 6 Click OK. A Mackie Control icon will be added to the Control Surfaces window. Close the Control Surfaces window, and switch to LC Xmu. Soundtrack should now be communicating with the emulated Mackie Control — with the default “Untitled” Soundtrack document open, the LC Xmu display will look like this:



Soundtrack setup for LC Xmu is now complete.

What next?

For details of the Mackie Control support in Soundtrack, **see the Soundtrack manual** — chapter 12, *Using Control Surfaces*.

Note that the emulated Mackie Control may only be active when Soundtrack is the foreground application.

See the [Reference Manual: Hosts: Apple Soundtrack](#) section for details of the LC Xmu host implementation for Soundtrack. See the [Reference Manual: Controllers](#) section for your controller for the default function mappings for Soundtrack.

You may [setup other host applications](#) you wish to use, or proceed to the next section, [Introduction to LC Xmu](#).

Apple/Emagic Logic

LC Xmu supports any version of Logic that runs in OS X (Logic 5.3 or higher).

Please read the [Setting up your host](#) introduction and ensure **Logic is not running before proceeding**.

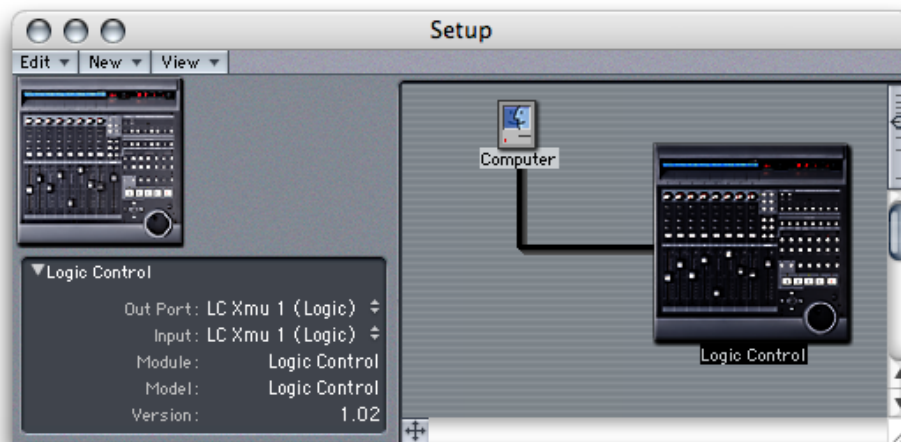
- 1 In the LC Xmu Preferences window, choose **Logic** as the **Host Application**. Note that **Logic Macro** will automatically be selected as the **Thru Format**.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input type="checkbox"/>	Cubase	(no ports)	normal
	Live		
	Logic		
	Reason		
	TotalMix		

- 2 Check the **On** checkbox. LC Xmu will create virtual CoreMIDI source and destination ports — these are the ports Logic will use to communicate with the emulated Logic Control.

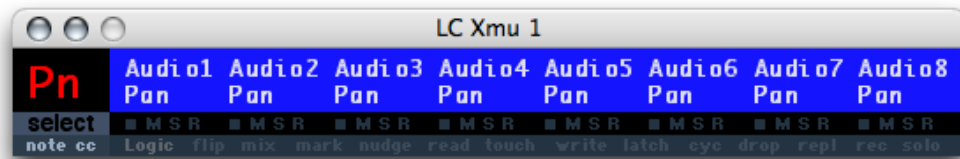
On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input checked="" type="checkbox"/>	Logic	LC Xmu 1 (Logic)	Logic macro

- 3 Start Logic. Logic will automatically scan for supported control surfaces near the end of its startup process. LC Xmu will respond with the appropriate handshake for a Logic Control, and Logic should open the **Control Surfaces Setup** window with a Logic Control installed.



If Logic does not install the Logic Control automatically, you may add a Logic Control manually by choosing **New: Install...** from the local window menu. Ensure the installed Logic Control **Out Port** and **Input** parameters are set to **LC Xmu 1 (Logic)**.

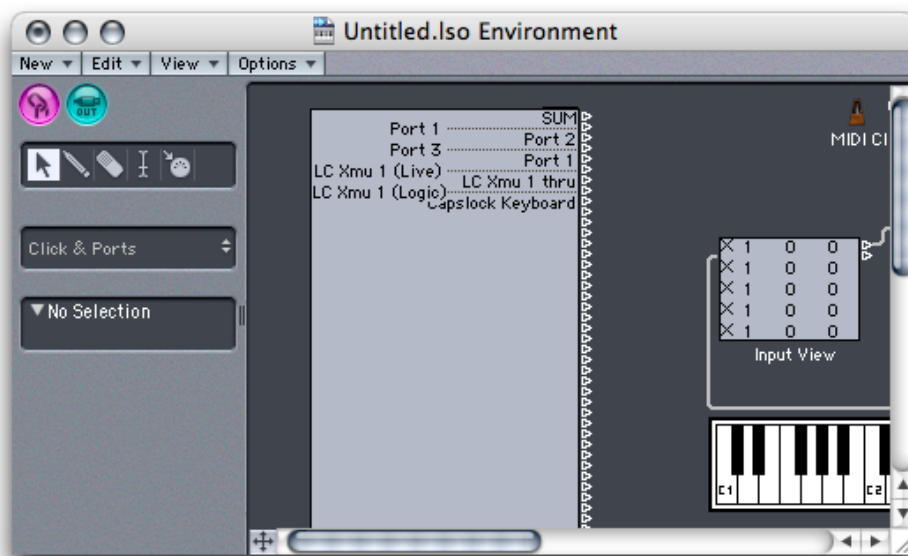
- 4 Close the Control Surfaces Setup window and switch to LC Xmu. Logic should now be communicating with the emulated Logic Control, and the LC Xmu display will look something like this (depending on the tracks in your autoload song):



- 5 It is necessary to block all input coming directly from your hardware controller ports, otherwise Logic will receive both a Logic Control event and the controller source event, which is not what you want. **You should also block LC/MC data intended for other host applications.** There are several ways to do this, depending on your Logic version and MIDI requirements.

EITHER:

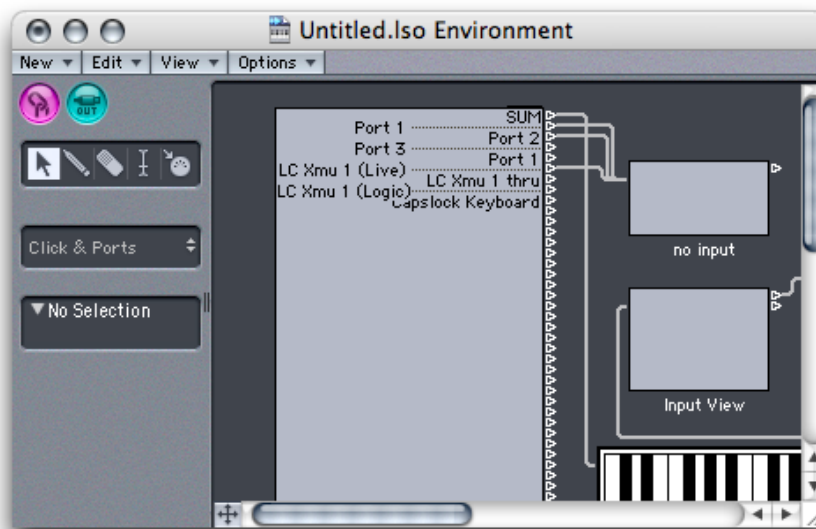
- A If you will not be using any other MIDI input devices with Logic tracks, and your entire controller will always be used as a Logic Control, you may simply disconnect the **Physical Input** object in Logic's environment **Clicks and Ports** layer. Open a Logic environment window, switch to the **Clicks & Ports** layer, and delete all cables coming from the **Physical Input** object (this only has a single outlet in Logic Audio/Express).



Note that this will prevent **all** MIDI signals from reaching the Logic Arrange window. It will not prevent MIDI signals from reaching Logic's **MIDI Remote** or **MIDI Learn**.

OR:

- B** If you are using Logic Gold, Logic Platinum or Logic Pro, you may block individual **Physical Input** ports by cabling to a **Monitor** object with no outgoing cables. In the example below, **Port 1** and **Port 2** (hardware controller ports) and **LC Xmu 1 (Live)** (Live's MC input port) are blocked by cabling to the "no input" **Monitor**.



This will prevent **all** MIDI signals from **Port 1**, **Port 2** and **LC Xmu 1 (Live)** from reaching the Logic Arrange window. It will not prevent MIDI signals from those ports from reaching Logic's **MIDI Remote** or **MIDI Learn**.

All other ports will be merged via the cable from the **SUM** outlet.

Note that if you add or remove hardware MIDI devices or MIDI interfaces, Logic may rearrange the order of the ports on the Physical Input object, but will **not** rearrange the cabling to match. This method is therefore best suited to unchanging MIDI setups.

If you are using this method, you should choose **normal** as the **Thru Format** for Logic in the LC Xmu Preferences window.

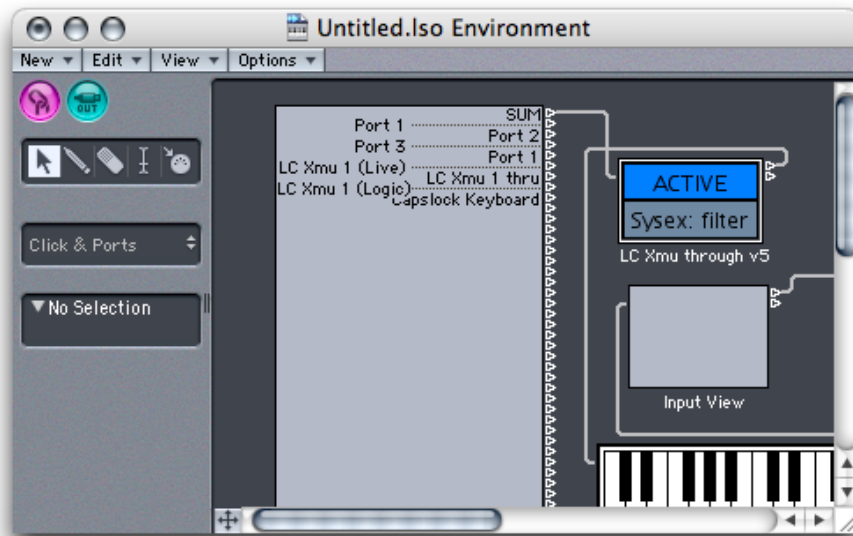
Ensure that the ports you are blocking match the **MIDI Input Ports** you have selected for your controllers in LC Xmu Preferences. Note: **Korg KONTROL** users should block both Port 2 and Port 3 from the controller.

OR:

- C If you are using Logic Audio or Logic Express, and you will be using other MIDI input devices with Logic tracks, or you wish to use spare or bypassed controls or keys on your controller as input for Logic tracks; or if you are using Logic Gold, Logic Platinum or Logic Pro but wish to retain a simple single-cable MIDI input environment; you should use the supplied **LC Xmu through** macro object. This object manages LC Xmu passthrough for all cabled ports when used in conjunction with the **Logic macro** option in LC Xmu Preferences **Thru Format**.

Open the supplied *LC Xmu through v5.iso* Logic song, located in the *Host support* folder inside the LC Xmu application folder. Copy the **LC Xmu through v5** macro object into your existing Logic song, cabling it from the **Physical Input** object's **SUM** outlet as shown.

LC Xmu 2.0+ requires the v5 macro — earlier versions may not work correctly.



Alternately, you can simply replace the entire environment **Clicks & Ports** layer with the same layer from the *LC Xmu through v5.iso* Logic song, by deleting, copying and pasting, or by using **Options: Import Environment: Layer...** in the environment window local menu.

OR:

- D Use [MIDIPIPE](#)'s "hijack" ability to hide the controller hardware input port(s) from Logic — do this after starting LC Xmu (so the port is not hidden from LC Xmu), but before starting Logic. See the MIDIPIPE manual for details.

If you choose method A, B, or C, **you should make the appropriate environment changes in every Logic song that you will use with LC Xmu.** For this reason, you should make the changes as required in your Autoload and other template songs, so that new songs based on those will already have the environment changes in place.

Logic setup for LC Xmu is now complete.

What next?

For details of the extensive Logic Control support in Logic, **see the Logic Control sections in the document *Logic7_DedicatedCntrlSurfaceInfo.pdf***, available from Apple's website at www.apple.com/support/logic/, or manuals.info.apple.com/en/Logic7_DedicatedCntrlSurfaceInfo.pdf

See the [Reference Manual: Hosts: Apple/Emagic Logic](#) section for details of the LC Xmu host implementation for Logic. See the [Reference Manual: Controllers](#) section for your controller for the default function mappings for Logic.

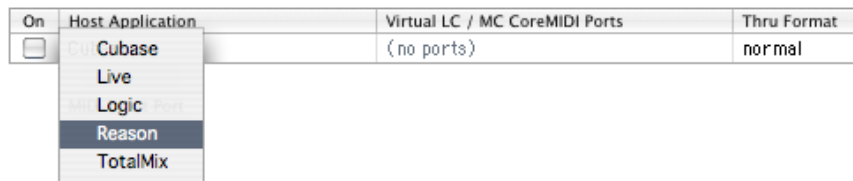
You may [setup other host applications](#) you wish to use, or proceed to the next section, [Introduction to LC Xmu](#).

Propellerheads Reason

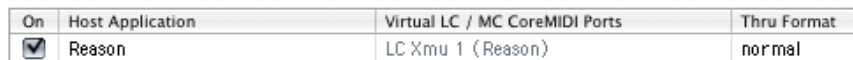
Reason 3.0 or higher is required for Mackie Control support. LC Xmu does not support earlier versions of Reason, which do not support the Mackie Control.

Please read the [Setting up your host](#) introduction before proceeding.

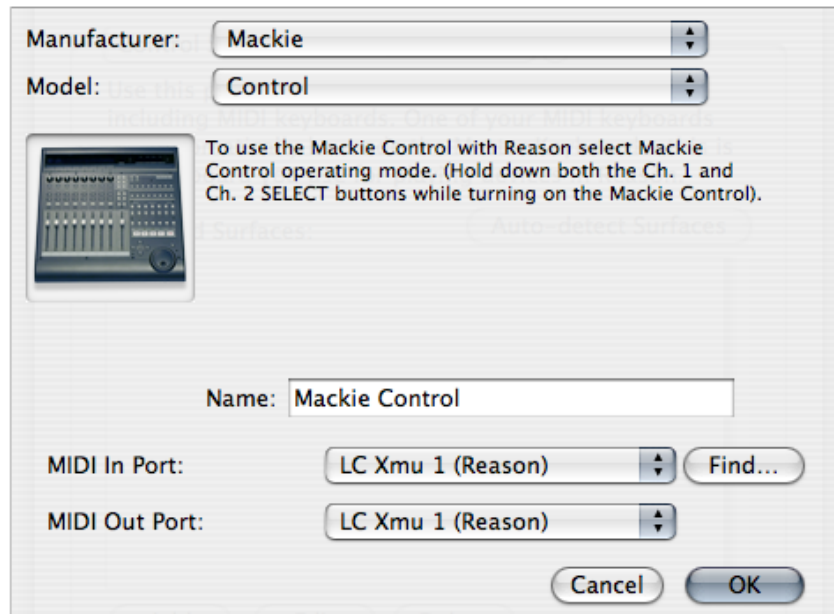
- 1 In the LC Xmu Preferences window, choose **Reason** as the **Host Application**.



- 2 Check the **On** checkbox. LC Xmu will create virtual CoreMIDI source and destination ports — these are the ports Reason will use to communicate with the emulated Mackie Control.

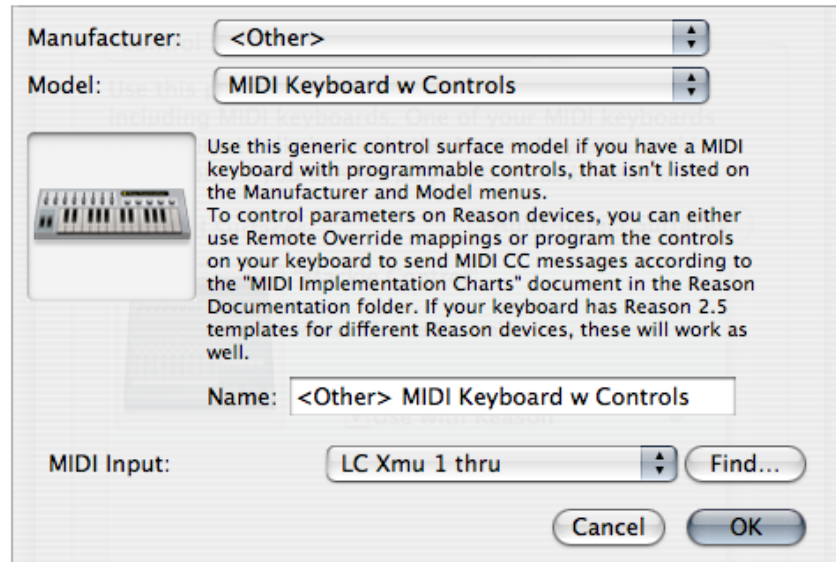


- 3 Close the LC Xmu Preferences window and leave LC Xmu running. Start Reason and choose **Preferences** from the **Reason** menu. Choose **Control Surfaces and Keyboards** in the Reason Preferences window. Click the **Add** button and add a Mackie Control as shown below. The input and output ports you should select for the Mackie Control are the LC Xmu virtual CoreMIDI source and destination ports created in step 2.



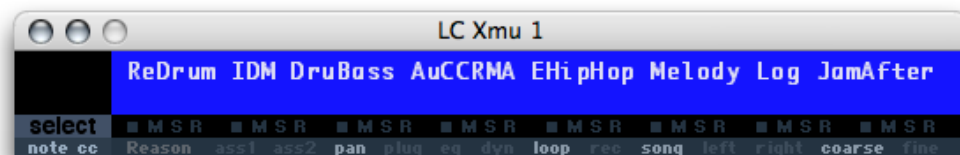
Click **OK**. The Reason Preferences window will display the attached Mackie Control.

- 4 Optional — if you wish to use spare or bypassed controls or keys on your controller as input for Reason tracks, click the **Add** button again. Add an appropriate generic controller, using the LC Xmu passthrough port as the **MIDI Input** and click **OK**.



IMPORTANT — do not add your controller using its hardware input ports. Doing so will cause Reason to see both a Mackie Control event and the controller source event, which is not what you want.

- 5 Close the Reason Preferences window and switch to LC Xmu. Reason should now be communicating with the emulated Mackie Control — for example if you select the Mixer Automation track in the Reason demo song, the LC Xmu display will look something like this:



Reason setup for LC Xmu is now complete.

What next?

For details of the Mackie Control support in Reason, see the ***Mackie*** section of the ***Reason 3 Control Surface Details.pdf*** document, included with your Reason installation.

See the [Reference Manual: Hosts: Propellerheads Reason](#) section for details of the LC Xmu host implementation for Reason. See the [Reference Manual: Controllers](#) section for your controller for the default function mappings for Reason.

You may [setup other host applications](#) you wish to use, or proceed to the next section, [Introduction to LC Xmu](#).

RME TotalMix

RME TotalMix is the general name for the RME Fireface Mixer and RME HDSP Mixer.
TotalMix 2.01 or higher is required for Mackie Control support. LC Xmu does not support earlier versions of TotalMix, which do not support the Mackie Control.

Please read the [Setting up your host](#) introduction before proceeding.

- 1 In the LC Xmu Preferences window, choose **TotalMix** as the **Host Application**.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input type="checkbox"/>	Cubase	(no ports)	normal
	Live		
	Logic		
	Reason		
	TotalMix		

- 2 Check the **On** checkbox. LC Xmu will create virtual CoreMIDI source and destination ports — these are the ports TotalMix will use to communicate with the emulated Mackie Control.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input checked="" type="checkbox"/>	TotalMix	LC Xmu 1 (TotalMix)	normal

- 3 Close the LC Xmu Preferences window and leave LC Xmu running. Start TotalMix and choose **Preferences** from the **Options** menu. Configure the **MIDI Controller** section as below. The **MIDI Input** and **MIDI Output** ports should be the LC Xmu virtual CoreMIDI source and destination ports created in step 2.

MIDI Controller

MIDI Input

LC Xmu 1 (TotalM...

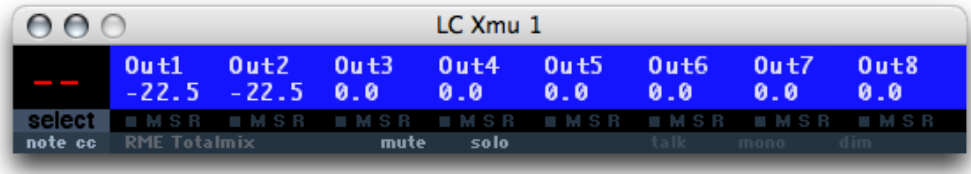
MIDI Output

LC Xmu 1 (TotalM...

☒ Full LC Display Support

Click **OK**. Ensure **Deactivate MIDI in Background** in the **Options** menu is **unchecked**.

- 5 Switch to LC Xmu. TotalMix should now be communicating with the emulated Mackie Control. The LC Xmu display will look something like this:



Note that the top line of the display may not appear until you have switched the controlled row or fader bank, forcing TotalMix to re-send all data.

TotalMix setup for LC Xmu is now complete.

Notes

For details of the Mackie Control support in TotalMix, see the *MIDI Remote Control* section of the *TotalMix_demo_e.pdf* document, downloadable from the RME website at www.rme-audio.com/english/download/totalmix_manual_e.zip.

See the [Reference Manual: Hosts: RME TotalMix](#) section for details of the LC Xmu host implementation for TotalMix. See the [Reference Manual: Controllers](#) section for your controller for the default function mappings for TotalMix.

You may [setup other host applications](#) you wish to use, or proceed to the next section, [Introduction to LC Xmu](#).

Steinberg Cubase/Nuendo

Cubase/Nuendo 3.0 or higher is required for Mackie Control support. Version 2.x includes some Mackie Control support and may work, but is not officially supported. The instructions below are for Cubase SX 3.0, but should also apply to Nuendo.

Please read the [Setting up your host](#) introduction and **ensure Cubase is not running** before proceeding.

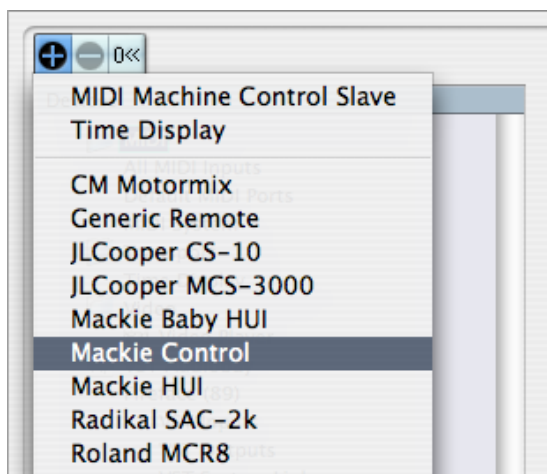
- 1 In the LC Xmu Preferences window, choose **Cubase** as the **Host Application**.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input type="checkbox"/>	Cubase	(no ports)	normal
	Live		
	Logic		
	Reason		
	TotalMix		

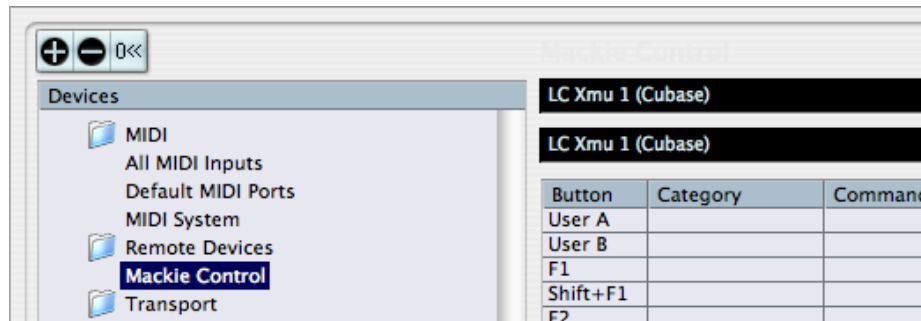
- 2 Check the **On** checkbox. LC Xmu will create virtual CoreMIDI source and destination ports — these are the ports Cubase will use to communicate with the emulated Mackie Control.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input checked="" type="checkbox"/>	Cubase	LC Xmu 1 (Cubase)	normal

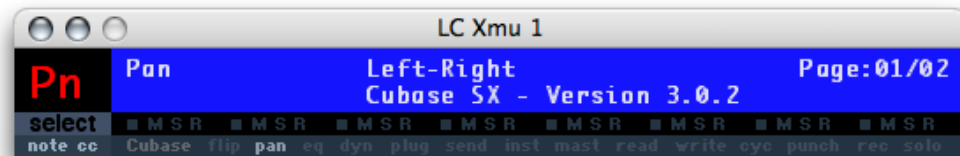
- 3 Close the LC Xmu Preferences window and leave LC Xmu running. Start Cubase and choose **Device Setup** from the **Devices** menu. Click the **+** (Add Device) button and choose **Mackie Control** from the menu.



- 4 The input and output ports you should select for the Mackie Control are the LC Xmu virtual CoreMIDI source and destination ports created in step 2.



- 5 Click **OK**. The Cubase Device Setup window will close. Switch to LC Xmu. Cubase should now be communicating with the emulated Mackie Control — the LC Xmu display below is an example with no Cubase project open.



If you wish to use passed-through or bypassed keys or controls on your controller as input for MIDI or Instrument tracks in Cubase, you should use the LC Xmu passthrough port — **LC Xmu 1 thru** — as the track input. **Do not use your controller's hardware ports as input for Cubase tracks.** You can disable controller input ports in **Device Setup: MIDI: All MIDI Inputs**.

Cubase setup for LC Xmu is now complete.

What next?

For details of the Mackie Control support in Cubase/Nuendo, **see the *Mackie Control.pdf* documentation**, included with your Cubase/Nuendo installation.

See the [Reference Manual: Hosts: Steinberg Cubase/Nuendo](#) section for details of the LC Xmu host implementation for Cubase/Nuendo. See the [Reference Manual: Controllers](#) section for your controller for the default function mappings for TotalMix.

You may [setup other host applications](#) you wish to use, or proceed to the next section, [Introduction to LC Xmu](#).

Introduction to LC Xmu

Before proceeding further, ensure you have completed [setting up your hardware controller](#) and [setting up your host application](#).

If you have done so, **LC/MC setup is complete** and **LC Xmu is already working** with your host application, using the default function mapping for your controller — see the [Reference Manual: Controllers](#) section for the default function maps for each controller and host application. You may wish to spend some time experimenting — refer to your host application's Logic/Mackie Control documentation to learn how to use the emulated LC/MC.

The information in this section is intended as a brief tour of basic LC Xmu features and functionality. More detailed information about individual features, controller support and host support can be found in the [Reference Manual](#) section.

MIDI input messages

Open the LC Xmu Preferences window by double-clicking the LC Xmu display, or by pressing the **P** key on your computer keyboard. Note LC Xmu may consume more CPU resources or slow down if the Preferences window is open **and** multiple controls are used simultaneously.

NOTES

Press any control sending notes — a key on your controller keyboard for example. In the **Function Map** section, LC Xmu displays the source controller number (the controller line will also be highlighted in the **Controllers** section), the incoming MIDI event, and the LC/MC function the event is mapped to.

Source	Note / CC Event	Function mapping	
Controller 0	Note 84	PASS THROUGH	Options...

In the example above, Note number 84 from the first controller will be sent to the LC Xmu passthrough port unmodified, and does not perform any LC/MC functions.

If you are using the **Generic** controller module, notes 48–72 are mapped to various LC/MC functions by default. Most other controller modules have all notes mapped to **PASS THROUGH** by default. See the [Reference Manual: Controllers](#) section for host-specific default function maps for each controller.

CCs

Press or move any absolute (non-endless) control sending CCs — a fader on your controller for example.

Source	Note / CC Event	Function mapping	
Controller 0	Control 7	Fader Ch 1	Options...

In the example above, CC number 7 from the first controller is mapped to the emulated LC/MC's **Fader Ch 1**. Your controller's default mapping for CC 7 may be different.

ENDLESS ENCODERS

If your controller has endless encoders — also known as endless rotaries, endless dials, alpha dials jogwheels or v-pots — and you are not using the **Generic controller**, **Generic feedback** or **Generic MIDI mixer** modules (which do not support true endless encoder messages), move any endless control sending CCs.

Source	Note / CC Event	Function mapping	
Controller 0	Encoder 10	V-Pot Ch 1	Options...

In the example above, an endless encoder sending CC number 10 from the first controller is mapped to the emulated LC/MC's **V-Pot Ch 1**. Your controller's default mapping for an Encoder sending CC 10 may be different.

BUTTONS

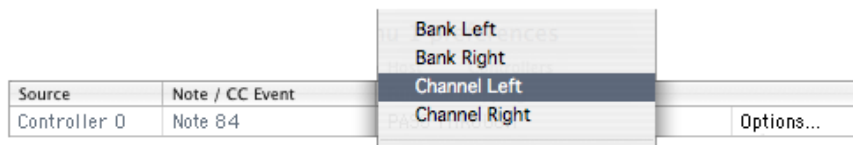
For use with LC Xmu's **Generic controller** or **Generic MIDI mixer** modules, buttons on your controller **must send separate messages when pressed and when released**. Note or CC messages may be used — the value when the button is pressed must be 1 or greater, and the value when the button is released must be 0. This type of button is often known as a "momentary" button, and is functionally identical to the way MIDI keys work.

OTHER MIDI MESSAGES

LC Xmu only works with Note and CC messages. All other MIDI message types — Pitchbend, Program Change, Channel Pressure (Aftertouch), Polyphonic Pressure — are passed through to the LC Xmu passthrough port unmodified, and are not available for function mapping. Sysex messages and Realtime messages are not passed through.

Function mapping

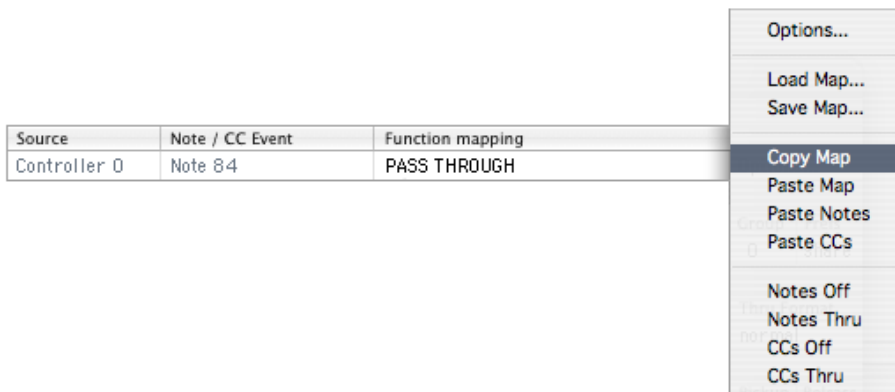
To add or change a function mapping for any supported control, simply move the control and choose the desired LC/MC function from the **Function Mapping** menu.



In the example above, Note number 84 from the first controller is being mapped to the emulated LC/MC's **Channel Left** function. The edited function map will be saved to disk immediately, in the LC Xmu preferences folder.

Each controller has a separate function map — this means that if you are merging two or more controllers, the same Note, CC or Encoder number on each controller may be mapped separately. Multiple controls may be mapped to the same LC/MC function.

You may save/load function maps to/from disk, copy/paste among function maps, and set all Notes or all CCs to **OFF** or **PASS THROUGH** using the various operations in the **Options...** menu. Operations apply to the currently shown **Source** controller's function map.



The altered map will be saved to disk immediately, in the LC Xmu preferences folder. If you have customized any of the default function maps, it is highly recommended you save the custom map to a convenient location as a backup. You must save the map for each controller separately.

ESSENTIAL FUNCTIONS

When building a function map from scratch, the following are the core LC/MC functions required for general operation and navigation by most hosts — start by choosing **Notes thru** and **CCs thru** from the **Options...** menu (to ensure any default mappings are removed), then map your available controls to the following functions for basic LC/MC functionality:

Fader Ch 1–8 (best for absolute controls, can be used with endless encoders).

V-Pot Ch 1–8 (best for true endless encoders, can be used with absolute controls).

Select Ch 1–8.

Bank Left and **Bank Right** (**Channel Left** and **Channel Right** in Reason).

The six buttons in the **Assign** section of the LC/MC (**Pan**, **Send**, **Plug-Ins**, etc) — hosts use different names for these, and may not use all the buttons. Consult your host's Mackie Control documentation for details.

Page Up and **Page Down**, or **Page Left** and **Page Right**, or **Cursor Up/Down/Left/Right**, depending on the host application.

Flip, if you have no V-Pots mapped and the host application supports it.

The LC Xmu **Modifier** function.

For basic function mappings on a per-host basis, refer to the default generic function maps supplied, as documented in the [Reference Manual: Controllers: Generic controller](#) section.

Mapping to V-Pots/Jogwheel

Ideally, **you should only use true endless encoders** to emulate the LC/MC's endless **V-Pot Ch 1–8** and **Jogwheel** functions. The emulated V-Pots/Jogwheel will function exactly as expected.

LC Xmu 2.1+ also allows non-endless (absolute) controls to be mapped to **V-Pot Ch 1–8**. This provides a partial solution to the difficulty of accessing V-Pot-controlled parameters for host applications that do not support the LC/MC fader **Flip** function.

When using a non-endless control mapped to an endless V-pot, **you will often find that you run out of adjustment range** on the non-endless control. The LC Xmu **Modifier** function can be used to silently reset the non-endless control to a more appropriate position. For example:

The LC/MC V-pot is controlling an onscreen parameter with a range of 0–127, and a current value of 67.

The non-endless hardware control mapped to the V-pot has an initial value of 25.

Decreasing the value of the hardware control will only be able to decrease the controlled parameter value to 42 (onscreen parameter value minus available hardware range).

Hold down the key or button mapped to **Modifier** and move the hardware control to a value greater than the onscreen parameter. V-Pot-controlled parameter values will not be affected while **Modifier** is held down.

Decreasing the value of the hardware control will now be able to decrease the controlled parameter value all the way to zero.

Note that a V-Pot may be controlling a parameter that has more than 128 possible values (selecting plugins for example). In this case you will need to repeatedly reset the non-endless control position via the **Modifier** function to access the full V-Pot range.

Mapping non-endless controls to **Jogwheel** is not supported.

If your host application supports the LC/MC **Flip** function, you will probably find it more intuitive and convenient to use controls mapped to **Fader Ch 1–8** with **Flip** on to access V-Pot-controlled parameters — the host application switches to absolute control via the faders.

See the Mackie Control documentation for your host application for more information about the fader **Flip** function.

LC Xmu Modes

LC Xmu Modes alter the behaviour of any controls assigned to **Select Ch 1–8**. This allows the LC/MC to be emulated with far fewer buttons — a real LC/MC has over 100 buttons.

The Modes defined may differ for each host application, and are user-editable — see the [Reference Manual: Hosts](#) section for a full per-host listing of Mode functions. As a general outline, many hosts will have these Modes defined:

Mode number	Mode name/colour	Select Ch 1–8 functions
1	select (grey)	Select Ch 1–8
2	mute (green)	Mute Ch 1–8
3	solo (yellow)	Solo Ch 1–8
4	record (red)	Record Ch 1–8
5	vselect (blue)	V-Select Ch 1–8
6	transport (grey)	RW / FF / Stop / Play / Rec / + 3 others

There are several Mode-specific functions available for assignment. Many default function maps have the **Mode Rotate Up** function assigned to some control — this rotates the current LC Xmu Mode among Modes 1–5 as above. With the **Modifier** function held down, **Mode Rotate Up** rotates among Modes 6–10.

The other Mode-specific functions are **Mode Rotate Down**, and ten individual functions to directly switch to each of the ten Modes. In addition, most hosts have **Modifier + Select Ch 1–8** defined to directly switch to Modes 1–8.



The screenshot above shows LC Xmu in **mute** mode (green). A button assigned to **Select Ch 3** has been pressed, with the result that channel 3 has been muted. If the controls you have assigned to **Select Ch 1–8** aren't doing what you think they should, check LC Xmu's current mode!

The Modifier function

The **Modifier** function allows LC Xmu to modify the behaviour of other functions, much like the modifier keys on a computer keyboard. Hold down the button or key assigned to **Modifier** and press or move another control.

Not all functions have additional **Modifier** functions defined. The **Modifier** functions defined may differ for each host application, and are user-editable — see the [Reference Manual: Hosts](#) section for a full per-host listing of **Modifier** functions. As a general outline, all hosts will have these default **Modifier** functions defined:

Modifier + Fader Ch1–8: Fader fine resolution.

Modifier + V-Pot Ch1–8: Non-endless controls: disables V-Pot output for absolute control repositioning. True endless encoders: V-pot behaves as Jogwheel.

Modifier + Select Ch1–8: Switch to Modes 1–8.

Modifier + Bank Left (Channel Left in Reason): Host Select

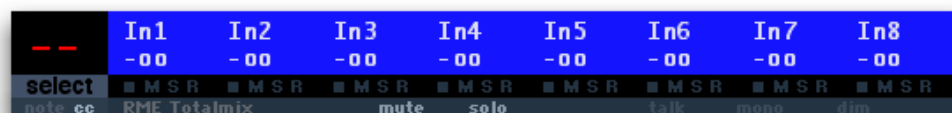
Modifier + Mode Rotate Up: Rotate among Modes 6–10.

Bypass and passthrough

LC Xmu optionally allows unused Note/CC controls and keys to be passed through to the host application. When a control is mapped to **PASS THROUGH**, it will be sent unmodified to the LC Xmu passthrough port — *LC Xmu 1 thru*. A Note/CC control may be mapped to **OFF**, in which case it will be blocked. Pitchbend, Program Change, Channel Pressure and Polyphonic Pressure events are always passed through via the LC Xmu passthrough port. Sysex and Realtime events are always blocked.

LC Xmu also offers three dedicated bypass functions — **Bypass All**, **Bypass Notes**, and **Bypass CCs** — these temporarily bypass **all** matching input events, sending them to the LC Xmu passthrough port.

For example, if you are using notes on your controller keyboard mapped to LC/MC functions, using **Bypass Notes** will allow you to switch to regular keyboard notes, to play MIDI tracks or softsynths in your host application, **while still using CC controls to emulate the LC/MC**. **Bypass CCs** will allow you to do the same with any CC controls, while still using Notes to emulate the LC/MC. **Bypass All** bypasses both notes and CCs.



Bypass status is displayed below the Mode indicator as above — in this example, Notes are bypassed (dimmed), CCs are active.

Your host application should be setup to use MIDI input from the LC Xmu passthrough port, not MIDI input directly from the controller hardware ports.

The passthrough port state for all events is controlled on a per-host basis by the **Thru Format** setting in LC Xmu Preferences:

off — no events will be passed through

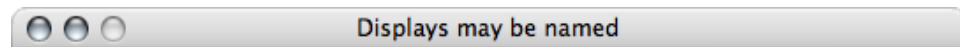
normal — events will be passed through unmodified

Logic macro — a special poly-pressure trigger event will be passed through, for use only with the *LC Xmu through* Logic environment macro, as discussed in [Setting up your host application: Apple/Emagic Logic](#).

Some controller modules may offer additional bypass abilities — see the [Reference Manual: Controllers](#) section for more information.

The LC Xmu display

Each LC Xmu display corresponds to one emulated LC, MC or XT. The display sections represent separate areas of the emulated LC/MC/XT, or functions specific to LC Xmu.



The display titlebar shows the LC Xmu instance number, or the custom display name if a name has been entered in LC Xmu Preferences.



The blue section emulates the LC/MC **LCD screen**. This section turns red when the LC Xmu instance's Preferences window is open.



The black **Channel Status** strip displays the emulated LC/MC's eight channels of select, mute, solo and record button LEDs.



The grey **LED Status** strip displays the currently selected host application, and the most appropriate of the emulated LC/MC's other button LEDs for that host.



The red-on-black **Assign Display** shows the state of the emulated LC/MC's 7-segment LED Assignment display, if the host application makes use of it.



The **Mode Display** shows the current LC Xmu Mode.



The **Bypass Display** shows the LC Xmu Note-bypass and CC-bypass state.



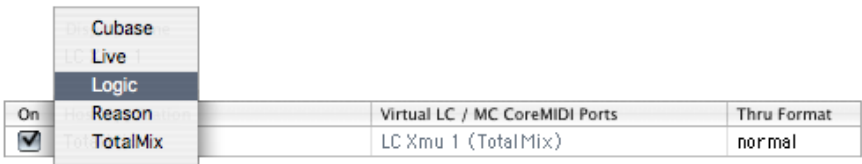
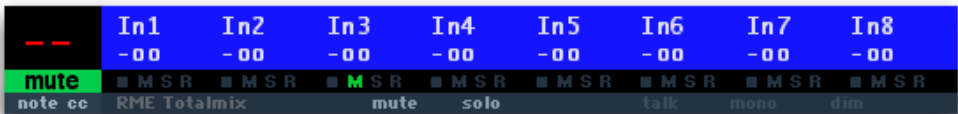
Displays may be stretched to match your controller channel spacing by dragging the bottom-right corner. Spacing can be controlled, sections of the display may be hidden, and the display can be grouped with others for moving, and made to “float” above other applications. See the [Reference Manual: Preferences: Display](#) section for more information.

Host switching

LC can work with multiple running host applications, allowing you to switch the emulated MC/LC between hosts on the fly. Each host's LC/MC state is saved, and **continues to be updated** while the emulated LC/MC controls other hosts. It is not necessary for the host to release the LC/MC while in the background.

Each LC Xmu instance can communicate with all enabled hosts at once (if each host is also set up to communicate with that LC Xmu instance), but the controllers in the LC Xmu instance only communicate with the currently-selected, enabled host.

To switch host, select the desired host from the LC Xmu Preferences **Host Application** menu.



If the selected host's **On** checkbox is checked (enabled), LC Xmu will update the display with the current information for the new host. Hardware controllers supporting feedback will also be updated.



You can rotate among enabled hosts for the topmost LC Xmu instance by pressing the **H** key on your computer keyboard (when the LC Xmu Preferences window is closed or in the background), and/or by mapping the **Host Select** function to a control on your controller. Note that you will need to map the **Host Select** function for all enabled hosts to rotate among them all from the controller.

Most hosts also map **Modifier + Bank Left** to **Host Select**.

It is possible for LC Xmu to send a trigger event — polyphonic pressure note 127, value 0 — via the LC/MC virtual port when switching host, and to make use of that to activate the desired host (or perform other scriptable functions) with MIDI Pipe's "AppleScript Trigger" functionality. An example MIDI Pipe document is available on request. See [Getting Support](#) for more information about MIDI Pipe.

The trigger event is not sent by default — to enable it, add any of the following lines to the file `~/Library/Preferences/LC Xmu/startup.js`:

```
m.hosttrigger_midi = 1;  
m.hosttrigger_key = 1;  
m.hosttrigger_menu = 1;
```

These enable the trigger event to be sent when the LC Xmu host is switched by MIDI **Host Select** function (or **Modifier + Bank Left** in most hosts), keycommand, or Preferences menu selection, respectively.

Multiple LC Xmu instances

LC Xmu can run multiple instances at once, emulating multiple LC/MCs (or XTs). Each instance has its own display and emulates a single LC, MC or XT unit. The [Reference Manual: LC Xmu Instances](#) section contains more information about LC Xmu instances.

There are various possible uses for multiple LC Xmu instances, including:

- Splitting a single controller between two simultaneously-active host applications — for example, using a Mackie Control primarily to control Logic, but using the MC master fader to control TotalMix main outs, without needing to switch the entire controller between hosts.
- Emulating multiple MCs when using multiple controllers, or a controller that has 16 channels of controls.
- Using one controller as a dedicated LC/MC for one application, and another controller as a dedicated LC/MC for a different application.

Specific instructions for setting up multiple LC Xmu instances for these tasks is beyond the scope of this documentation, due to the many possible configurations of controllers/instances/hosts.

In general, when using the same controller as input to multiple LC Xmu instances, begin by ensuring that each individual control is mapped to a LC/MC function or to **PASS THROUGH** in only **one** LC Xmu instance, and to **OFF** in all other LC Xmu instances. The Function mapping **Options** menu contains some useful **All off** and **All thru** operations to assist with this.

Most other information you need is present in this documentation and/or in the host's LC/MC documentation, but please feel free to ask for clarification and assistance on the [Opus Locus web forum](#).

GETTING SUPPORT

If you can't find what you're looking for in this documentation:

For details of LC/MC functionality in specific host applications, **refer to the Control Surface documentation provided with your host application**. Check the host application's website for updated software and documentation. Check the host application's support forums for any problems relating to LC/MC support in the application.

For hardware controllers, consult your hardware documentation, check the manufacturer's website for updated drivers or firmware, and the manufacturer's support forums for relevant issues.

The old lc-xmu-users Yahoo group and mailing list is now closed — LC Xmu (and LC Xview) are supported via the Opus Locus forums at www.opuslocus.net/forums/. Viewing is open to guests, free registration is required to post (to keep out the spammers). Users of the LC Xmu demo are welcome to post. Check the forum for news and updates...

USEFUL UTILITIES

MIDI Pipe is an excellent general purpose MIDI routing utility by SubtleSoft. If you need to perform sophisticated MIDI merging/splitting/routing/mangling before or after LC Xmu, MIDI Pipe can probably take care of it for you. Available free from www.macupdate.com/info.php/id/10541 — but please make a donation.

MIDI Monitor is a tool for monitoring OS X CoreMIDI data transmission, to or from hardware or virtual MIDI ports. Useful for diagnosing hardware connection or driver problems, or just as a reality-check when things get confusing. Available free from SNoize at www.snoize.com/MIDImonitor/

SysEx Librarian, also from SNoize, can send and receive sysex dumps to/from your hardware, save and load to/from disk, and generally manage saved sysex dumps. It's simple, and a lot less flaky than some of the editors/librarians/tools supplied with controller hardware. Get it from www.snoize.com/SysExLibrarian/

REFERENCE MANUAL

LC Xmu instances

LC Xmu can emulate multiple Logic Controls or Mackie Controls (including XT units). In theory, depending on host application support, the limit is 128. In practice, the limit is probably considerably lower, depending on MIDI bandwidth, CPU and memory requirements for both LC Xmu and the host application.



Each LC Xmu display corresponds to a single emulated LC or MC — an **LC Xmu instance**.

Choosing **New LC Xmu Instance** from the **File** menu (or **Command-N**) opens a new LC Xmu instance, using the first unused LC Xmu instance number, and restores any saved preferences for that LC Xmu instance.

Opening a new LC Xmu instance executes the following procedure:

- 1 Stored controller preferences for the LC Xmu instance are checked against the known controller modules from application startup. If the stored controller is unknown, that controller will be set to **(no controller)**. If the stored controller is known, its stored port will be checked against known input ports from application startup. If the stored port is unknown, the controller port will be set to **(no input)**.
- 2 The */Function Maps/* folder inside the LC Xmu preferences folder is checked for the appropriate */LC Xmu Instance/Controller Number/Controller Type/* structure. Folders will be created if necessary.
- 3 Stored host preferences for the LC Xmu instance are checked against the known host definitions from application startup. If the stored host is known, it will be initialized with the stored settings. If a stored host is unknown, it will be ignored. All hosts found at application startup will be initialized for the LC Xmu instance.

- 4 The LC Xmu instance's virtual CoreMIDI input and output ports are created for each host, using the CoreMIDI unique IDs stored in preferences if possible. The LC Xmu instance's virtual CoreMIDI passthrough port is created, using the stored CoreMIDI unique ID from preferences if possible.
- 5 The active host for the LC Xmu instance is preloaded, using settings from the preferences file, or default settings if preferences are not found or invalid. See the [Reference Manual: Preferences: Host](#) section for details of the full host-load process. Controller-specific files and the host/controller-specific function map are not loaded, as the controllers are not yet initialized.
- 6 Active controllers for the LC Xmu instance are created and initialized, using settings from the preferences file, or default settings if preferences are not found or invalid. Each controller must initialize fully before the next controller is created. See the [Reference Manual: Preferences: Controllers](#) section for details of the full controller-load process.
- 7 The LC Xmu instance display is created, initialized using settings from the preferences file (or default settings if preferences are not found or invalid), and opened.

When an LC Xmu instance is topmost, choosing **Delete LC Xmu** (instance #) from the **File** menu (or **Command-W**) deletes that LC Xmu instance. All the LC Xmu instance's preferences are saved for re-use.

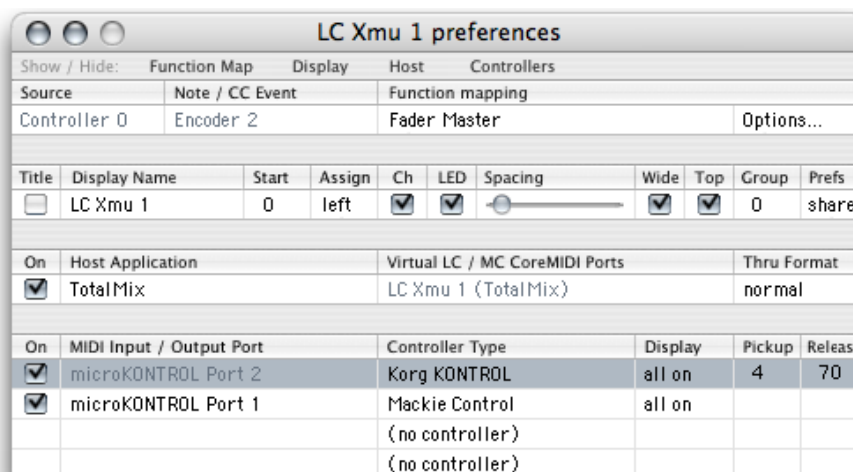
Opening or deleting any LC Xmu instance creates or deletes its corresponding virtual CoreMIDI ports immediately.

While this is absolutely allowable within the OS X CoreMIDI spec, it may cause problems with some host applications — especially Cubase or Logic 6.4.x (which will promptly crash or hang), and other Logic versions (which may present a pointless modal alert dialog, then re-scan control surfaces, possibly messing things up in the process). Other applications are generally more well-behaved, but adding or deleting LC Xmu instances (or starting LC Xmu) should preferably be done when host applications are not running.

Each LC Xmu instance display is horizontally-scalable — dragging in the bottom right-hand corner of the display (15 x 15 pixels) allows you to stretch or shrink the display, so that the onscreen display channels match the spacing of your hardware controls. You may control both inter-channel and inter-character spacing, sections of the display may be hidden, the display can be grouped with others for moving, and made to “float” above other applications. See the [Reference Manual: Preferences: Display](#) section for more information.

Key commands are available for various functions for the topmost LC Xmu instance. See the [Reference Manual: Key Commands](#) section for details.

Preferences



Double-clicking any LC Xmu display opens its Preferences window. Note that a single Preferences window may optionally be shared among several LC Xmu instances, according to the **Preferences: Display** section **Prefs** setting (see below).

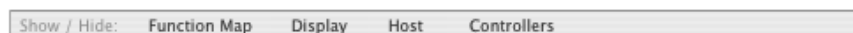
When an LC Xmu instance is topmost, pressing the **P** key on the computer keyboard opens (or closes) the Preferences window for that LC Xmu instance. If a Preferences window is topmost, the key will have no effect.

When a Preferences window is topmost, choosing **Close Preferences** from the **File** menu (or **Command-W**) closes the Preferences window.



LC Xmu instances with an open Preferences window display a red LCD screen. Double-clicking any red LCD screen closes its Preferences window, and restores the blue LCD screen.

The four sections of the Preferences window may be shown or hidden (and re-ordered) by clicking the corresponding **Show/Hide** labels immediately below the Preferences window titlebar — **Function Map**, **Display**, **Host**, **Controllers**.



Each Preferences window section's settings are discussed in the pages following.

Function Map

The **Function Map** section displays and sets the current function mapping for the last-moved hardware control.

Source	Note / CC Event	Function mapping	
Controller 0	Control 7	Fader Ch 1	Options...

SOURCE

This display-only field shows the source controller for the last-received MIDI Note or CC event. All function map operations apply to this controller only.

NOTE / CC EVENT

This display-only field shows the last-received MIDI Note or CC event for the current controller. Only event types that are available for mapping will be shown — Note, Control (absolute CC), and Encoder (relative CC).

FUNCTION MAPPING

This menu displays the LC Xmu function mapping for the last-received MIDI source event. Choosing a function from this menu remaps the currently displayed source event, for the current **Source** controller only. The function map will be saved immediately in the LC Xmu Preferences folder.

Source	Note / CC Event	Function mapping	
Controller 0	Note 84		Options...

Bank Left

Bank Right

Channel Left

Channel Right

OPTIONS

This menu allows you to perform various operations on the function map for the current **Source** controller.

Source	Note / CC Event	Function mapping	
Controller 0	Note 84	PASS THROUGH	

Options...

Load Map...

Save Map...

Copy Map

Paste Map

Paste Notes

Paste CCs

Notes Off

Notes Thru

CCs Off

CCs Thru

Load Map — Opens a standard file open dialog so you can load a function map from disk. The loaded function map replaces all Note, Control and Encoder mappings for the current **Source** controller. The loaded function map will be saved immediately in the LC Xmu Preferences folder.

Save Map — Opens a standard file save dialog so you can save a function map to disk. The saved function map contains all Note, Control and Encoder mappings for the current **Source** controller.

Copy Map — Copies all Note, Control and Encoder mappings for the current **Source** controller to the internal LC Xmu clipboard (not the system clipboard).

Paste Map — Pastes from the internal LC Xmu clipboard, replacing all Note, Control and Encoder mappings for the current **Source** controller. The function map will be saved immediately in the LC Xmu Preferences folder.

Paste Notes — Pastes from the internal LC Xmu clipboard, replacing all Note mappings for the current **Source** controller. The function map will be saved immediately in the LC Xmu Preferences folder.

Paste CCs — Pastes from the internal LC Xmu clipboard, replacing all Control and Encoder mappings for the current **Source** controller. The function map will be saved immediately in the LC Xmu Preferences folder.

Notes Off — Sets all Note mappings for the current **Source** controller to **OFF**. The function map will be saved immediately in the LC Xmu Preferences folder.

Notes Thru — Sets all Note mappings for the current controller to **PASS THROUGH**. The function map will be saved immediately in the LC Xmu Preferences folder.

CCs Off — Sets all Control and Encoder mappings for the current controller to **OFF**. The function map will be saved immediately in the LC Xmu Preferences folder.

CCs Thru — Sets all Control and Encoder mappings for the current controller to **PASS THROUGH**. The function map will be saved immediately in the LC Xmu Preferences folder.

Display

The display section of the LC Xmu preferences window allows control over various aspects of the LC Xmu instance display.

Title	Display Name	Start	Assign	Ch	LED	Spacing	Wide	Top	Group	Prefs
<input type="checkbox"/>	LC Xmu 1	0	left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	share

TITLE

The **Title** checkbox turns the LC Xmu instance title bar on and off. Note that the title bar must be visible for the LC Xmu instance to be visible when using the Mac OS X Exposé feature.

DISPLAY NAME

The **Display Name** may be edited by clicking and typing. The name is shown in the LC Xmu instance title bar, if visible. By default, the name of any display is *LC Xmu* plus the instance number.

START

This value determines the channel numbering for the channel 1–8 select LEDs. When set to 0 (the default) the select LEDs are numberless squares. When set to a value of 1–92, the select LEDs use ascending numbers. This can be used to help keep track of channel-to-control relationships if your hardware controller is not directly beneath the LC Xmu display. Click-hold on the **Start** value and drag up/down to set it.

ASSIGN

This menu determines the position and visibility of the LC Xmu Assign display (red letters on black — “Pn”, etc). The options are **off**, **left**, **right**. If the **Ch** and **LED** checkboxes are checked, it will also determine position and visibility of the LC Xmu instance Mode and Bypass display sections.

CH

The **Ch** checkbox toggles the LC Xmu instance Channel Status display on and off. The Channel Status display shows the Select, Mute, Solo and Record LEDs for each channel. If the **LED** display below it is visible, unchecking the **Ch** checkbox will also hide the **LED** display.

PREFERENCES

Display

Title	Display Name	Start	Assign	Ch	LED	Spacing	Wide	Top	Group	Prefs
<input type="checkbox"/>	LC Xmu 1	0	left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	share

LED

The **LED** checkbox toggles the host-specific LC Xmu LED display on and off. The LED display shows the currently selected host application, and the most appropriate LEDs for that host application. If the Channel Status display above it is hidden, checking the **LED** checkbox will also show the Channel Status display.

SPACING

The **Spacing** slider controls whether additional horizontal display space is calculated as inter-channel (fully left) or inter-character (fully right) space, with a range of adjustment between the two. Adjust this to provide the best balance between channel separation and display readability. When the LC Xmu display is at its narrowest size, this slider has no effect.

WIDE

The **Wide** checkbox toggles between preserving channel positions, or using the full available width of the display window — when checked, changing the **Spacing** parameter will also change the inter-channel spacing. When the LC Xmu display is at its narrowest size, this checkbox has no effect.

TOP

The **Top** checkbox, when checked, sets the LC Xmu instance to be “always on top” when the LC Xmu application is in the background. The display will “float” above all other applications. The **Top** checkbox also applies to the Preferences window for that display.

GROUP

LC Xmu supports display linking via the **Group** parameter. Displays with the same **Group** number will move together when any display is moved by **dragging in the display window**. Dragging the display window titlebar moves a grouped display individually for group-relative positioning. Bringing a grouped display to the front will bring all other displays and preferences windows in that group to the front. Displays assigned to **group 0** are unlinked. Click-hold on the **Group** number and drag up/down to set it.

PREFS

The **Prefs** menu controls whether a LC Xmu instance shares the global Preferences window or uses its own separate Preferences window. The default is for all LC Xmu instances to share a single Preferences window. Setting the **Prefs** menu to **sep** will cause that LC Xmu instance to use a separate Preferences window, and will take effect the next time a Preferences window is opened for that LC Xmu instance.

PREFERENCES

Host

Host

LC Xmu can communicate with multiple running host applications at the same time, and saves the current state of the emulated LC/MC for each host application. This allows you to use a single controller and switch among running host applications on the fly.

The host application does not need to release the controller when in the background — enabled host midi ports are always active. As far as the host application is concerned, the emulated LC/MCs are always connected, and are dedicated to that host.

Host-switching is done at low-priority — if you are running under high CPU load, LC Xmu may take a few seconds to switch host, but should not cause your host application(s) to overload.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input checked="" type="checkbox"/>	Cubase	LC Xmu 1 (Cubase)	normal

ON

Each LC Xmu host may be enabled (checked) or disabled (unchecked). Disabled hosts do not create a virtual CoreMIDI host-port pair at startup, will be skipped when using the **Host Select** function or the **H** key command to rotate among hosts, and LC Xmu will neither receive LC/MC data from nor send LC/MC data to the host application.

Enabling or disabling a host will create or delete the corresponding virtual CoreMIDI ports immediately.

While this is absolutely allowable within the OS X CoreMIDI spec, it may cause problems with some host applications — especially Cubase or Logic 6.4.x (which will promptly crash or hang), and other Logic versions (which will present a pointless modal alert dialog, then re-scan control surfaces, possibly messing things up in the process). Other applications are generally more well-behaved, but enabling/disabling hosts should preferably be done when host applications are not running.

Hosts may be enabled/disabled independently for each LC Xmu instance. This allows you to minimize the number of virtual ports created, and to switch among a different set of hosts for each LC Xmu instance.

PREFERENCES

Host

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input type="checkbox"/>	Cubase	(no ports)	normal
	Live		
	Logic		
	Reason		
	TotalMix		

HOST APPLICATION

The available host applications in this menu correspond to the host folders inside the LC Xmu application package, at */Contents/support/hosts/*. **Choosing a host performs the following actions:**

- 1 The host-specific function maps for all controllers are loaded from the LC Xmu Preferences folder. If the appropriate controller/host function map file is not found, the controller/host default map will be copied from the LC Xmu application package. If the appropriate controller/host default map does not exist, all controls are set to **PASS THROUGH**.
- 2 Any host-specific preference files are loaded for each active controller. For complex controllers like the Korg KONTROL, this may involve loading several files — located in the same folder as the controller module, in the LC Xmu application package. See the [Reference Manual: Controllers](#) section for more information.
- 3 The host *LEDs* file is loaded from the host folder in the LC Xmu application package. This file contains the appropriate LED names, positions and colours for the LC Xmu display.
- 4 The host *Preferences* file is loaded from the host folder in the LC Xmu application package. This file specifies various host-specific LC Xmu parameters.
- 5 The host *Overlay* file is loaded from the host folder in the LC Xmu application package. This file contains the appropriate function names for the **Function Map** menu — equivalent to the transparent plastic button label overlay for a hardware Logic Control or Mackie Control.
- 6 The host *Modes* file is loaded from the host folder in the LC Xmu application package. This file contains the appropriate Mode functions and names for the LC Xmu Mode Display.
- 7 The host *Modifier* file is loaded from the host folder in the LC Xmu application package. This file contains the appropriate **Modifier + Function** definitions.
- 8 The LC Xmu blue LCD, Channel Status, Assign, Mode, Note-bypass, CC-bypass and host-specific LED states are updated to reflect the current state of the emulated LC/MC for the newly-selected host. Any supported hardware displays and LEDs on the hardware controller are also updated accordingly.

PREFERENCES

Host

The host-load sequence is logged to the LC Xmu Status window — this data may be useful when troubleshooting.

The function **Host Select** may be directly mapped to a controller event, to switch among enabled hosts.

Note that you are not required to use a named host with a specific host application — if you have a Mackie Control-supporting host application that is not defined in LC Xmu, it will still work with any defined LC Xmu host, but the function names and LEDs will show incorrect names, and the displayed LEDs may perhaps not be the best choices for that host. If you are feeling especially intrepid, you can create your own host definition — email me for details.

On	Host Application	Virtual LC / MC CoreMIDI Ports	Thru Format
<input checked="" type="checkbox"/>	Cubase	LC Xmu 1 (Cubase)	normal

VIRTUAL LC / MC COREMIDI PORTS

This display-only field shows the input/output port names used by the emulated LC/MC. Set your host application to use these ports to communicate with the emulated LC/MC.

THRU FORMAT

This menu controls how MIDI data not mapped to LC/MC functions is passed through to the host application — for controls mapped to **PASS THROUGH**, for all CCs in CC-bypass mode, for all notes in note-bypass mode, and for pitchbend, program-change, channel-pressure and poly-pressure events. There are three possible **Thru Format** states:

off — no data is passed through, regardless of function mapping or bypass mode.

normal — data is passed through unmodified, according to function mapping and bypass mode.

Logic macro — data is passed through as trigger events (poly-pressure notes 0-4) for processing by the supplied *LC Xmu through* Logic environment macro. This passthrough mode should only be used with Logic, and only when the *LC Xmu through* macro is cabled into the Clicks and Ports layer of the Logic environment — see [Setting up your host application: Apple/Emagic Logic](#) for more information.

Each LC Xmu instance generates its own passthrough port, which is shared among all hosts for that LC Xmu instance. The passthrough port is named *LC Xmu [instance number] thru*. You should set your host application to use this port for receiving passed-through controller events — do not use the hardware ports coming directly from the controller.

Controllers

LC Xmu can merge up to four hardware controllers to form a single emulated LC/MC. This allows you to combine enough faders, knobs, and buttons or keys from various controllers for effective LC/MC emulation. With care, controllers may also be split or shared among LC Xmu instances.

When a hardware control is moved, the corresponding controller line becomes highlighted.

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	microKONTROL Port 2	Korg KONTROL	all on	4	50
<input checked="" type="checkbox"/>	microKONTROL Port 1	Generic controller		6	50
		{ no controller }			
		{ no controller }			

ON

The **On** checkbox enables/disables communication with the hardware controller, and is not available until a **Controller Type** and **MIDI Input Port** have first been selected.

MIDI INPUT/OUTPUT PORT

This menu allows you to specify the CoreMIDI input port that LC Xmu will use to receive data from your controller, and is not available until a **Controller Type** has been selected. Items in this menu correspond to port/device names in AudioMIDI Setup. If the controller module can use MIDI feedback, **MIDI Input/Output Port** also specifies the MIDI Output port for the controller (ie the the input and output ports must have the same name). If a controller always uses a known port name for communication (the Korg KONTROL for example), the port will be set automatically.

CONTROLLER TYPE

This menu allows you to select a **Controller Type** from the controller modules supplied.

If your specific controller does not appear in this menu, you should try **Generic controller**, or **Generic feedback** if your controller supports motorfader and/or LED button feedback.

If your generic controller sends fixed volume (CC7) and/or Pan (CC10) message on different MIDI channels (a typical "MIDI mixer" like the JL Cooper Faderbaby) and cannot be remapped or load a scene/template to send a different CC number for each control, you should try **Generic MIDI Mixer**.

See the [Reference Manual: Controllers](#) section for each supported **Controller Type** for in-depth discussion of the various controller modules.

PREFERENCES

Controllers

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
		(no controller)			
		Behringer BCR2000			
		Doepfer Pocket Dial			
		Generic controller			
		Generic MIDI mixer			
		JL Cooper CS-10			
		Korg KONTROL			
		Mackie Control			
		Novation Remote			

Choosing a Controller Type performs the following actions:

- 1 Any controller module previously loaded in that controller slot will be unloaded. The **On** state, **MIDI Input/Output Port** name, **Display** state, and **Pickup** and **Release** values will be retained and re-used for the new controller if appropriate.
- 2 The chosen controller module is loaded from disk, inside the LC Xmu application package at */Contents/support/controllers/*
- 3 The host-specific function map for the controller is loaded from the LC Xmu Preferences folder. If an appropriate controller/host function map file does not exist, the controller/host default map will be copied from the LC Xmu application package. If the appropriate controller/host default map does not exist, all controls are set to **PASS THROUGH** for that controller.
- 4 Any global or host-specific preference files and *LCD* or *LED* definition files for the controller type are loaded from the appropriate location in the LC Xmu application package.
- 5 The controller module requests the parameters it needs to know from LC Xmu, and tells LC Xmu which features it supports.
- 6 The controller module notifies LC Xmu when loading has completed or failed. If a controller-load sequence fails, the **Controller Type** will be reset to **(no controller)**. If the LC Xmu instance is initializing, the load sequence for the next controller (if any) will be started.

The controller-load sequence is logged to the LC Xmu Status window — this data may be useful when troubleshooting.

PREFERENCES

Controllers

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	microKONTROL Port 2	Korg KONTROL	all on		
<input checked="" type="checkbox"/>	microKONTROL Port 1	Generic controller	disable all		
		(no controller)			
		(no controller)			

- LCD screen
- assign display
- counter display
- signal & meters
- screen LEDs
- relay click

- LC Xmu bypass
- LC Xmu mode
- LC Xmu host

DISPLAY

If the chosen **Controller Type** supports MIDI feedback for **displays**, this menu allows you to selectively enable or disable that feedback. This may be used to prevent display conflicts when splitting a controller among multiple LC Xmu instances, by enabling display feedback for a single LC Xmu instance only, which will then have sole control of the corresponding display sections. Enabled display feedback types are bulleted.

Display will be set to **all on** and greyed-out for controller modules that support display feedback but do not support selective feedback. At this time, only the Mackie Control module supports selective display feedback.

A controller may not necessarily support all of the display feedback types in this menu — changing the status of unsupported display feedback types will have no effect on the controller.

Note that **control** feedback (motorfaders, V-pot LED rings, button LEDs) for controller modules is automatically enabled or disabled for each individual control, according to whether the corresponding LC/MC function is mapped.

Additionally, some controller modules may use a preference file (located in the LC Xmu application package) to map LC/MC LED feedback to specific hardware LEDs. See the [Reference Manual: Controllers](#) section for more detail.

PREFERENCES

Controllers

On	MIDI Input / Output Port	Controller Type	Display	Pickup	Release
<input checked="" type="checkbox"/>	Fireface (89) Port 1	Generic controller		6	50
		(no controller)			
		(no controller)			
		(no controller)			

PICKUP

If the chosen **Controller Type** includes absolute (non-endless) controls, this value controls how close the hardware control position must be to the software control position before the software control is synced.

Click-hold on the **Pickup** value and drag up/down to set it. For most controllers, values in the range of **3–12** should be appropriate. If the hardware control value passes through the software control value without syncing when moved quickly, increase the pickup value. Larger values will cause the software control to "jump" further when syncing.

Values are standard 7-bit MIDI (0-127). A value of **128** will turn **Pickup** off completely, and software controls will jump to the hardware control position as soon as the hardware control is moved.

RELEASE

If the chosen **Controller Type** includes absolute (non-endless) controls, this value controls how long the software control remains synced when the hardware control stops sending values.

Click-hold on the **Release** value and drag up/down to set it. For most uses, values in the range of **30–200** should be appropriate. If the hardware control frequently loses sync with the software control when moved very slowly, increase the release value. Larger values may result in unexpected software control jumps when moving a hardware control immediately following a fader bank-switch or other software configuration change.

Values are multiples of 100 milliseconds (1/10 second) — a value of 50 is half a second, 200 is two seconds, etc.

Key Commands

Some key commands are available for the topmost LC Xmu instance. The LC Xmu instance display must be topmost, not its Preferences window.

The numbers **1** thru **0** switch to Modes 1–10.

The **L** key toggles the display window vertically — blue LCD only; LCD + Channel Status; LCD + Channel Status + LED Status.

The **A** key toggles the display Assign/Mode/Bypass section on/off, on the left or right according to the last setting in **Display: Assign** preferences.

The **N** key toggles Note-bypass.

The **C** key toggles CC-bypass.

The **P** key opens/closes the Preferences window (the Preferences window may also be opened by double-clicking the display).

The **H** key rotates among enabled LC Xmu hosts.

Startup

At startup, LC Xmu executes the following procedure:

- 1 The user-startup file is read from `~/Library/Preferences/LC Xmu/startup.js`, and processed accordingly. If the **Shift** key is held down during startup, the user-startup file will be ignored.
- 2 The application package is scanned for host definitions.
- 3 The application package is scanned for supported controller modules.
- 4 If the LC Xmu preferences folder does not exist, it is created at `~/Library/Preferences/LC Xmu/`.
- 5 The preferences file is read from `~/Library/Preferences/LC Xmu/LC Xmu Preferences`. If the preferences file does not exist, it is created, and default preferences are used.

If the **Option** key is held down at startup, the preferences file will not be processed. All display/instance preferences will be reset to defaults **for the current LC Xmu session only**, and will **not** be saved at quit. This can be used to check that any problems are not caused by a corrupt preferences file, while retaining the original preferences for the next LC Xmu start.

If the **Control** key is held down at startup, the preferences file will not be processed. All display/instance preferences will be reset to defaults, and **will** be saved at quit.

This can be used to generate a clean preferences file, without deleting the old preferences — the original preferences file will be backed up with a serial number appended, ie `~/Library/Preferences/LC Xmu/LC Xmu preferences.0`, `~/Library/Preferences/LC Xmu/LC Xmu preferences.1`, etc.

Only the main preferences file is affected by the **Control** or **Option** key — function maps and global host/controller preferences files are not affected.

- 6 The system is queried for available MIDI input ports.
- 7 The state and location of the shared preferences window is initialized.
- 8 Active LC Xmu instances, hosts and controllers are created and initialized. Each LC Xmu instance must initialize fully before the next LC Xmu instance is created. See the [Reference Manual: LC Xmu instances](#) sections for details of the LC Xmu instance initialization sequence.

The entire startup sequence is logged to the LC Xmu Status window — this data may be useful when troubleshooting.

Preferences folder

The LC Xmu Preferences folder is located at `~/Library/Preferences/LC Xmu/`. This folder will be created at LC Xmu startup if it does not exist.

LC Xmu Preferences

The file `~/Library/Preferences/LC Xmu/LC Xmu Preferences` contains host, controller and display preferences for all LC Xmu instances that have ever been instantiated. If you close any LC Xmu instance, its preferences will be retained in this file for possible future use. Preferences are saved at quit. You should not manually edit this file.

If the **Option** key is held down at startup, the preferences file will not be processed. All display/instance preferences will be reset to defaults **for the current LC Xmu session only**, and will **not** be saved at quit. This can be used to check that any problems are not caused by a corrupt preferences file, while retaining the original preferences for the next LC Xmu start.

If the **Control** key is held down at startup, the preferences file will not be processed. All display/instance preferences will be reset to defaults, and **will** be saved at quit.

This can be used to generate a clean preferences file, without deleting the old preferences — the original preferences file will be backed up with a serial number appended, ie `~/Library/Preferences/LC Xmu/LC Xmu preferences.0`, `~/Library/Preferences/LC Xmu/LC Xmu preferences.1`, etc.

Only the main preferences file is affected by the **Control** or **Option** key — function maps and global host/controller preferences files are not affected.

Function Maps folder

The LC Xmu Preferences folder contains a folder structure dedicated to function maps. This is used to store the last-used function map for each LC Xmu instance, Controller number, Controller type, and Host. The folder structure is checked (and created if necessary) when opening each LC Xmu instance, using known controller/host names.

When changing or adding a new controller, or changing the current host, LC Xmu will look in the appropriate Instance/Controller/Type folder for a host-specific function map, and load that. If the function map is not found, LC Xmu will copy it into the folder from the default function maps in the LC Xmu application package. If there is no default, LC Xmu will set all controls to **PASS THROUGH** and save the new map into the folder.

Startup.js

The user-startup file at `~/Library/Preferences/LC Xmu/startup.js` is provided to customize certain aspects of LC Xmu's behaviour at startup, or to enable certain debugging options. *Startup.js* will be created if it does not exist. If the **Shift** key is held down during startup, the user-startup file will be ignored.

The following entries may be made in this file to modify LC Xmu behaviour:

m.hosttrigger_midi = 1;

send trigger event via the host-specific LC/MC virtual port on MIDI host-switch.

m.hosttrigger_key = 1;

send trigger event via the host-specific LC/MC virtual port on keycommand host-switch.

m.hosttrigger_midi = 1;

send trigger event via the host-specific LC/MC virtual port on menu host-switch.

m.cubase_assign_emulation = 1;

emulate the red LC/MC assign display for Cubase, which does not use the assign display.

m.processtime(ee, ii, dddd);

ee = 1–99, default 5.

Sets the time interval (in milliseconds) at which LC Xmu processes events. Setting this value lower than 5 may increase responsiveness (reduce latency), at the expense of higher CPU use. Values in the range of 6–10 may further reduce CPU use without significantly reducing responsiveness, depending on load.

ii = 1–99, default 15.

Sets the time interval (in milliseconds) at which LC Xmu checks for events **when idle** (when no events are being received). Higher values will reduce idle CPU use, but may also induce some latency for the first incoming event after an idle period.

dddd = 500+, default 999.

Sets the time interval (in milliseconds) after which LC Xmu will reduce CPU use to the idle value — ie if no input events are received for **dddd** milliseconds.

m.open(path, delay);

path = path to application or file, as *file://* plus full Unix path, including application or file extension, all enclosed by quotes.

delay = delay before opening (seconds)

LC Xmu can launch other applications or open files at startup. Multiple applications and/or files may be launched by adding multiple lines. For example, the line

m.open("file:///Applications/Logic Pro.app", 20) opens Logic Pro after a 20 second delay. Note the triple-slash used — this means the startup disk (/). Other disks must be accessed via the syntax */Volumes/diskname*, for example **m.open("file:///Volumes/FW Drive/projects/demo/demo.iso", 20)**

//

comment: causes the rest of the line (until a semicolon or return) to be ignored.

;

end of line

Hosts

This section documents the host definitions supplied with LC Xmu. Hosts are defined by text files located inside the LC Xmu application package at */Contents/support/hosts/*. Host definitions apply to all LC Xmu instances.

The *Overlay* file specifies the host-specific function names in the LC Xmu Preferences window **Function Mapping** menu. This is equivalent to a transparent hardware LC/MC button overlay sheet. Entries in the *Overlay* file beginning with *(unused)* will not appear in the Function Mapping menu. An entry consisting of a single hyphen (-) designates a menu separator line. The number at the beginning of each line is the function's position in the menu. You may **change** existing lines, but **do not add or remove lines** — LC Xmu references functions by menu line number, not by function name.

The *Modes* file specifies the host-specific Mode names and function mappings. The function mapping numbers correspond to line numbers in the *Overlay* file.

The *Modifier* file specifies the host-specific **Modifier + Function** mappings. The function mapping numbers correspond to line numbers in the *Overlay* file.

The *LEDs* file specifies the host-specific hostname and LED messages, positions, names and colours in LC Xmu's LED Status Display. The message numbers correspond to the MIDI Note numbers sent/received by the emulated LC/MC (**not** the line number in the *Overlay* file).

The *Preferences* file specifies various host-specific parameters used by LC Xmu.

[Ableton Live](#)

[Apple Final Cut](#)

[Apple Soundtrack](#)

[Apple/Emagic Logic](#)

[Propellerheads Reason](#)

[RME TotalMix](#)

[Steinberg Cubase/Nuendo](#)

HOSTS

Ableton Live

Ableton Live

Overlay

Line	Function	Line	Function	Line	Function
0	OFF	59	V-Select Ch 1	118	Previous Locator
1	PASS THROUGH	60	V-Select Ch 2	119	Next Locator
2	-	61	V-Select Ch 3	120	Loop
3	Fader Ch 1	62	V-Select Ch 4	121	Punch In
4	Fader Ch 2	63	V-Select Ch 5	122	Punch Out
5	Fader Ch 3	64	V-Select Ch 6	123	Home
6	Fader Ch 4	65	V-Select Ch 7	124	End
7	Fader Ch 5	66	V-Select Ch 8	125	-
8	Fader Ch 6	67	-	126	Rewind
9	Fader Ch 7	68	Assign: I-O	127	Fast Fwd
10	Fader Ch 8	69	Assign: Send	128	Stop
11	Fader Master	70	Assign: Pan	129	Play
12	-	71	Assign: Devices	130	Record
13	V-Pot Ch 1	72	Page Left	131	-
14	V-Pot Ch 2	73	Page Right	132	Arrow Up
15	V-Pot Ch 3	74	-	133	Arrow Down
16	V-Pot Ch 4	75	Bank Left	134	Arrow Left
17	V-Pot Ch 5	76	Bank Right	135	Arrow Right
18	V-Pot Ch 6	77	Channel Left	136	Fire Clip & Zoom
19	V-Pot Ch 7	78	Channel Right	137	Fire Scene
20	V-Pot Ch 8	79	Flip	138	(unused) -
21	Jogwheel	80	Returns	139	(unused) Footswitch 1
22	-	81	-	140	(unused) Footswitch 2
23	Arm Ch 1	82	Display: Meter	141	-
24	Arm Ch 2	83	Display: SMPTE/Beats	142	Fader Touch Ch 1
25	Arm Ch 3	84	-	143	Fader Touch Ch 2
26	Arm Ch 4	85	F1	144	Fader Touch Ch 3
27	Arm Ch 5	86	F2	145	Fader Touch Ch 4
28	Arm Ch 6	87	F3	146	Fader Touch Ch 5
29	Arm Ch 7	88	F4	147	Fader Touch Ch 6
30	Arm Ch 8	89	F5	148	Fader Touch Ch 7
31	-	90	F6	149	Fader Touch Ch 8
32	Solo Ch 1	91	F7	150	Fader Touch Master
33	Solo Ch 2	92	F8	151	-
34	Solo Ch 3	93	-	152	Bypass All
35	Solo Ch 4	94	F9	153	Bypass Notes
36	Solo Ch 5	95	F10	154	Bypass CCs
37	Solo Ch 6	96	F11	155	Modifier
38	Solo Ch 7	97	F12	156	Host Select
39	Solo Ch 8	98	F13	157	-
40	-	99	F14	158	Mode Rotate Up
41	Mute Ch 1	100	F15	159	Mode Rotate Down
42	Mute Ch 2	101	F16	160	Mode: Select
43	Mute Ch 3	102	-	161	Mode: Mute
44	Mute Ch 4	103	Modifier: Shift	162	Mode: Solo
45	Mute Ch 5	104	Modifier: Option	163	Mode: Record
46	Mute Ch 6	105	Modifier: Control	164	Mode: V-Select
47	Mute Ch 7	106	Modifier: Alt	165	Mode: Transport
48	Mute Ch 8	107	View: Session-Arrange	166	Mode: Session
49	-	108	View: Clipchain	167	Mode: F1-F8
50	Select Ch 1	109	View: Browser	168	Mode: F9-F16
51	Select Ch 2	110	View: Detail	169	Mode: User
52	Select Ch 3	111	Functions: Undo		
53	Select Ch 4	112	Functions: Back To Arrange		
54	Select Ch 5	113	Functions: Draw Mode		
55	Select Ch 6	114	Functions: Redo		
56	Select Ch 7	115	Functions: Marker		
57	Select Ch 8	116	Functions: Follow		
58	-	117	-		

HOSTS

Ableton Live

Modes

Mode number	Mode name	Mode character	Pixel offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
1	select	*	9	11	50	Select Ch 1
				12	51	Select Ch 2
				13	52	Select Ch 3
				14	53	Select Ch 4
				15	54	Select Ch 5
				16	55	Select Ch 6
				17	56	Select Ch 7
				18	57	Select Ch 8
2	mute	M	12	21	41	Mute Ch 1
				22	42	Mute Ch 2
				23	43	Mute Ch 3
				24	44	Mute Ch 4
				25	45	Mute Ch 5
				26	46	Mute Ch 6
				27	47	Mute Ch 7
				28	48	Mute Ch 8
3	solo	S	15	31	32	Solo Ch 1
				32	33	Solo Ch 2
				33	34	Solo Ch 3
				34	35	Solo Ch 4
				35	36	Solo Ch 5
				36	37	Solo Ch 6
				37	38	Solo Ch 7
				38	39	Solo Ch 8
4	record	R	8	41	23	Arm Ch 1
				42	24	Arm Ch 2
				43	25	Arm Ch 3
				44	26	Arm Ch 4
				45	27	Arm Ch 5
				46	28	Arm Ch 6
				47	29	Arm Ch 7
				48	30	Arm Ch 8
5	vselect	V	5	51	59	V-Select Ch 1
				52	60	V-Select Ch 2
				53	61	V-Select Ch 3
				54	62	V-Select Ch 4
				55	63	V-Select Ch 5
				56	64	V-Select Ch 6
				57	65	V-Select Ch 7
				58	66	V-Select Ch 8
6	transpt	T	7	61	126	Rewind
				62	127	Fast Forward
				63	128	Stop
				64	129	Play
				65	130	Record
				66	118	Previous Locator
				67	119	Next Locator
				68	120	Loop
7	session	s	6	71	134	Arrow Left
				72	135	Arrow Right
				73	132	Arrow Up
				74	133	Arrow Down
				75	107	View: Session-Arrange
				76	108	View: Clipchain
				77	136	Fire Clip & Zoom
				78	137	Fire Scene

HOSTS

Ableton Live

Mode number	Full name	Single character	Display offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
8	F1-F8	F	12	81	85	F1
				82	86	F2
				83	87	F3
				84	88	F4
				85	89	F5
				86	90	F6
				87	91	F7
				88	92	F8
9	F9-F16	f	9	91	94	F9
				92	95	F10
				93	96	F11
				94	97	F12
				95	98	F13
				96	99	F14
				97	100	F15
				98	101	F16
10	user	U	16	101	103	Modifier: Shift
				102	104	Modifier: Option
				103	105	Modifier: Control
				104	106	Modifier: Alt
				105	80	Returns
				106	121	Punch In
				107	122	Punch out
				108	115	Functions: Marker

HOSTS

Ableton Live

Modifier

Function number	Modifier + Function number	Function name	Modifier + Function name
3	3	Fader Ch 1	Fader Ch 1 — Fine resolution
4	4	Fader Ch 2	Fader Ch 2 — Fine resolution
5	5	Fader Ch 3	Fader Ch 3 — Fine resolution
6	6	Fader Ch 4	Fader Ch 4 — Fine resolution
7	7	Fader Ch 5	Fader Ch 5 — Fine resolution
8	8	Fader Ch 6	Fader Ch 6 — Fine resolution
9	9	Fader Ch 7	Fader Ch 7 — Fine resolution
10	10	Fader Ch 8	Fader Ch 8 — Fine resolution
11	11	Fader Master	Fader Master — Fine resolution
13	13	V-Pot Ch 1	V-Pot Ch 1 — no output (non-endless), Jogwheel (endless)
14	14	V-Pot Ch 2	V-Pot Ch 2 — no output (non-endless), Jogwheel (endless)
15	15	V-Pot Ch 3	V-Pot Ch 3 — no output (non-endless), Jogwheel (endless)
16	16	V-Pot Ch 4	V-Pot Ch 4 — no output (non-endless), Jogwheel (endless)
17	17	V-Pot Ch 5	V-Pot Ch 5 — no output (non-endless), Jogwheel (endless)
18	18	V-Pot Ch 6	V-Pot Ch 6 — no output (non-endless), Jogwheel (endless)
19	19	V-Pot Ch 7	V-Pot Ch 7 — no output (non-endless), Jogwheel (endless)
20	20	V-Pot Ch 8	V-Pot Ch 8 — no output (non-endless), Jogwheel (endless)
50	160	Select Ch 1	Mode: Select
51	161	Select Ch 2	Mode: Mute
52	162	Select Ch 3	Mode: Solo
53	163	Select Ch 4	Mode: Record
54	164	Select Ch 5	Mode: V-Select
55	165	Select Ch 6	Mode: Transport
56	166	Select Ch 7	Mode: Session
57	167	Select Ch 8	Mode: F1-F8
75	156	Bank Left	Host Select
158	158	Mode Rotate Up	Mode Rotate Up — Modes 6–10

NOTES

Functions not listed above do not have Modifier combinations defined, ie they modify to themselves.

Fader, V-Pot and Jogwheel modifier combinations are not user-specifiable via the *Modifier* file.

Modifier + Bypass combinations are reserved for use by Controller modules.

Suggestions for additional default Modifier combinations are welcome.

HOSTS

Ableton Live

LEDs

LED number	LC/MC note number	Pixel offset (H)	Pixel offset (V)	Text off	Text flash	Text on	RGB on	Allow scaling
1	-2	9	0	Live	Live	Live	95 102 110	0
2	50	50	0	flip	flip	flip	140 155 170	1
3	51	88	0	rtn	rtn	rtn	140 155 170	1
4	41	122	0	send	send	send	140 155 170	1
5	43	166	0	dev	dev	dev	140 155 170	1
6	44	202	0	left	left	left	140 155 170	1
7	45	240	0	right	right	right	140 155 170	1
8	74	285	0	arrange	session	session	140 155 170	1
9	100	345	0	zm/clip	zm/clip	zm/clip	140 155 170	1
10	101	406	0	scene	scene	scene	140 155 170	1
11	86	453	0	loop	loop	loop	140 155 170	1
12	95	493	0	rec	rec	rec	140 155 170	1
13	-1	9999	0	----	----	----	140 155 170	1
14	-1	9999	0	----	----	----	140 155 170	1
15	-1	9999	0	----	----	----	140 155 170	1
16	-1	9999	0	----	----	----	140 155 170	1
17	-1	9999	0	----	----	----	140 155 170	1
18	-1	9999	0	----	----	----	140 155 170	1
19	-1	9999	0	----	----	----	140 155 170	1
20	-1	9999	0	----	----	----	140 155 170	1
21	-1	9999	0	----	----	----	140 155 170	1
22	-1	9999	0	----	----	----	140 155 170	1
23	-1	9999	0	----	----	----	140 155 170	1
24	-1	9999	0	----	----	----	140 155 170	1

NOTES

A note number of -1 prevents an LED from being drawn.

A note number of -2 initially draws an LED using its "on" colour.

The "off" colour is not user-specifiable.

The Pixel offset (V) value is not currently used.

Not all hosts make use of the LC/MC LEDs' flashing state.

HOSTS

Apple Final Cut Pro

Apple Final Cut

Overlay

Line	Function	Line	Function	Line	Function
0	OFF	59	(unused) V-Select Ch 1	118	Previous Marker
1	PASS THROUGH	60	(unused) V-Select Ch 2	119	Next Marker
2	-	61	(unused) V-Select Ch 3	120	Home
3	Fader Ch 1	62	(unused) V-Select Ch 4	121	(unused) Drop
4	Fader Ch 2	63	(unused) V-Select Ch 5	122	(unused) Replace
5	Fader Ch 3	64	(unused) V-Select Ch 6	123	(unused) Click
6	Fader Ch 4	65	(unused) V-Select Ch 7	124	End
7	Fader Ch 5	66	(unused) V-Select Ch 8	125	-
8	Fader Ch 6	67	(unused) -	126	Rewind
9	Fader Ch 7	68	(unused) Assign: Track	127	Fast Fwd
10	Fader Ch 8	69	(unused) Assign: Send	128	Stop
11	Fader Master	70	(unused) Assign: Pan	129	Play
12	-	71	(unused) Assign: Plug-In	130	(unused) Record
13	V-Pot Ch 1	72	(unused) Assign: EQ	131	-
14	V-Pot Ch 2	73	(unused) Assign: Instrument	132	Arrow Up
15	V-Pot Ch 3	74	(unused) -	133	Arrow Down
16	V-Pot Ch 4	75	Bank Left	134	Arrow Left
17	V-Pot Ch 5	76	Bank Right	135	Arrow Right
18	V-Pot Ch 6	77	(unused) Channel Left	136	(unused) Zoom
19	V-Pot Ch 7	78	(unused) Channel Right	137	(unused) Scrub
20	V-Pot Ch 8	79	(unused) Flip	138	-
21	Jogwheel	80	(unused) Global View	139	(unused) Footswitch 1
22	-	81	(unused) -	140	(unused) Footswitch 2
23	(unused) Record Ch 1	82	(unused) Display: Name-Value	141	(unused) -
24	(unused) Record Ch 2	83	(unused) Display: SMPTE/Beats	142	Fader Touch Ch 1
25	(unused) Record Ch 3	84	-	143	Fader Touch Ch 2
26	(unused) Record Ch 4	85	F1	144	Fader Touch Ch 3
27	(unused) Record Ch 5	86	F2	145	Fader Touch Ch 4
28	(unused) Record Ch 6	87	F3	146	Fader Touch Ch 5
29	(unused) Record Ch 7	88	F4	147	Fader Touch Ch 6
30	(unused) Record Ch 8	89	F5	148	Fader Touch Ch 7
31	-	90	F6	149	Fader Touch Ch 8
32	Solo Ch 1	91	F7	150	Fader Touch Master
33	Solo Ch 2	92	F8	151	-
34	Solo Ch 3	93	-	152	Bypass Notes & CCs
35	Solo Ch 4	94	(unused) Global: Midi Tracks	153	Bypass Notes
36	Solo Ch 5	95	(unused) Global: Inputs	154	Bypass CCs
37	Solo Ch 6	96	(unused) Global: Audio Tracks	155	Modifier
38	Solo Ch 7	97	(unused) Global: Audio Instr	156	Host Select
39	Solo Ch 8	98	(unused) Global: Aux	157	-
40	-	99	(unused) Global: Busses	158	Mode Rotate Up
41	Mute Ch 1	100	(unused) Global: Outputs	159	Mode Rotate Down
42	Mute Ch 2	101	(unused) Global: User	160	Mode: Select
43	Mute Ch 3	102	(unused) -	161	Mode: Mute
44	Mute Ch 4	103	Modifier: Shift	162	Mode: Solo
45	Mute Ch 5	104	Modifier: Option	163	Mode: Record
46	Mute Ch 6	105	Modifier: Control	164	Mode: Function
47	Mute Ch 7	106	Modifier: Cmd/Alt	165	(unused) Mode: Transport
48	Mute Ch 8	107	(unused) Automation: Read/Off	166	(unused) Mode: F1-F8
49	-	108	(unused) Automation: Write	167	(unused) Mode: Global Views
50	Select Ch 1	109	(unused) Automation: Trim	168	(unused) Mode: Fader Touch
51	Select Ch 2	110	(unused) Automation: Touch	169	(unused) Mode: User
52	Select Ch 3	111	(unused) Automation: Latch		
53	Select Ch 4	112	(unused) Group		
54	Select Ch 5	113	Utilities: Save		
55	Select Ch 6	114	Utilities: Undo		
56	Select Ch 7	115	Utilities: Cancel		
57	Select Ch 8	116	Utilities: Enter		
58	-	117	-		

HOSTS

Apple Final Cut Pro

Modes

Mode number	Mode name	Mode character	Pixel offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
1	select	*	9	11	50	Select Ch 1
				12	51	Select Ch 2
				13	52	Select Ch 3
				14	53	Select Ch 4
				15	54	Select Ch 5
				16	55	Select Ch 6
				17	56	Select Ch 7
				18	57	Select Ch 8
2	mute	M	12	21	41	Mute Ch 1
				22	42	Mute Ch 2
				23	43	Mute Ch 3
				24	44	Mute Ch 4
				25	45	Mute Ch 5
				26	46	Mute Ch 6
				27	47	Mute Ch 7
				28	48	Mute Ch 8
3	solo	S	15	31	32	Solo Ch 1
				32	33	Solo Ch 2
				33	34	Solo Ch 3
				34	35	Solo Ch 4
				35	36	Solo Ch 5
				36	37	Solo Ch 6
				37	38	Solo Ch 7
				38	39	Solo Ch 8
9	utility	U	12	41	120	Home
				42	118	Previous Marker
				43	119	Next Marker
				44	124	End
				45	114	Undo
				46	115	Cancel
				47	116	Enter
				48	113	Save
5	function	F	4	51	85	F1
				52	86	F2
				53	87	F3
				54	88	F4
				55	89	F5
				56	90	F6
				57	91	F7
				58	92	F8
6	select	*	9	61	50	Select Ch 1
				62	51	Select Ch 2
				63	52	Select Ch 3
				64	53	Select Ch 4
				65	54	Select Ch 5
				66	55	Select Ch 6
				67	56	Select Ch 7
				68	57	Select Ch 8
7	mute	M	12	71	41	Mute Ch 1
				72	42	Mute Ch 2
				73	43	Mute Ch 3
				74	44	Mute Ch 4
				75	45	Mute Ch 5
				76	46	Mute Ch 6
				77	47	Mute Ch 7
				78	48	Mute Ch 8

HOSTS

Apple Final Cut Pro

Mode number	Full name	Single character	Display offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
8	solo	S	15	81	32	Solo Ch 1
				82	33	Solo Ch 2
				83	34	Solo Ch 3
				84	35	Solo Ch 4
				85	36	Solo Ch 5
				86	37	Solo Ch 6
				87	38	Solo Ch 7
				88	39	Solo Ch 8
9	utility	U	12	91	120	Home
				92	118	Previous Marker
				93	119	Next Marker
				94	124	End
				95	114	Undo
				96	115	Cancel
				97	116	Enter
				98	113	Save
10	function	F	4	101	85	F1
				102	86	F2
				103	87	F3
				104	88	F4
				105	89	F5
				106	90	F6
				107	91	F7
				108	92	F8

HOSTS

Apple Final Cut Pro

Modifier

Function number	Modifier + Function number	Function name	Modifier + Function name
3	3	Fader Ch 1	Fader Ch 1 — Fine resolution
4	4	Fader Ch 2	Fader Ch 2 — Fine resolution
5	5	Fader Ch 3	Fader Ch 3 — Fine resolution
6	6	Fader Ch 4	Fader Ch 4 — Fine resolution
7	7	Fader Ch 5	Fader Ch 5 — Fine resolution
8	8	Fader Ch 6	Fader Ch 6 — Fine resolution
9	9	Fader Ch 7	Fader Ch 7 — Fine resolution
10	10	Fader Ch 8	Fader Ch 8 — Fine resolution
13	13	V-Pot Ch 1	V-Pot Ch 1 — no output (non-endless), Jogwheel (endless)
14	14	V-Pot Ch 2	V-Pot Ch 2 — no output (non-endless), Jogwheel (endless)
15	15	V-Pot Ch 3	V-Pot Ch 3 — no output (non-endless), Jogwheel (endless)
16	16	V-Pot Ch 4	V-Pot Ch 4 — no output (non-endless), Jogwheel (endless)
17	17	V-Pot Ch 5	V-Pot Ch 5 — no output (non-endless), Jogwheel (endless)
18	18	V-Pot Ch 6	V-Pot Ch 6 — no output (non-endless), Jogwheel (endless)
19	19	V-Pot Ch 7	V-Pot Ch 7 — no output (non-endless), Jogwheel (endless)
20	20	V-Pot Ch 8	V-Pot Ch 8 — no output (non-endless), Jogwheel (endless)
50	160	Select Ch 1	Mode: Select
51	161	Select Ch 2	Mode: Mute
52	162	Select Ch 3	Mode: Solo
53	163	Select Ch 4	Mode: Utility
54	164	Select Ch 5	Mode: Function
75	156	Bank Left	Host Select
158	158	Mode Rotate Up	Mode Rotate Up — Modes 6–10

NOTES

Functions not listed above do not have Modifier combinations defined, ie they modify to themselves.

Fader, V-Pot and Jogwheel modifier combinations are not user-specifiable via the *Modifier* file.

Modifier + Bypass combinations are reserved for use by Controller modules.

Suggestions for additional default Modifier combinations are welcome.

HOSTS

Apple Final Cut Pro

LEDs

LED number	LC/MC note number	Pixel offset (H)	Pixel offset (V)	Text off	Text flash	Text on	RGB on	Allow scaling
1	-2	9	0	"Final Cut"	"Final Cut"	"Final Cut"	95 102 110	0
2	-1	9999	0	----	----	----	140 155 170	1
3	-1	9999	0	----	----	----	140 155 170	1
4	-1	9999	0	----	----	----	140 155 170	1
5	-1	9999	0	----	----	----	140 155 170	1
6	-1	9999	0	----	----	----	140 155 170	1
7	-1	9999	0	----	----	----	140 155 170	1
8	-1	9999	0	----	----	----	140 155 170	1
9	-1	9999	0	----	----	----	140 155 170	1
10	-1	9999	0	----	----	----	140 155 170	1
11	-1	9999	0	----	----	----	140 155 170	1
12	-1	9999	0	----	----	----	140 155 170	1
13	-1	9999	0	----	----	----	140 155 170	1
14	-1	9999	0	----	----	----	140 155 170	1
15	-1	9999	0	----	----	----	140 155 170	1
16	-1	9999	0	----	----	----	140 155 170	1
17	-1	9999	0	----	----	----	140 155 170	1
18	-1	9999	0	----	----	----	140 155 170	1
19	-1	9999	0	----	----	----	140 155 170	1
20	-1	9999	0	----	----	----	140 155 170	1
21	-1	9999	0	----	----	----	140 155 170	1
22	-1	9999	0	----	----	----	140 155 170	1
23	-1	9999	0	----	----	----	140 155 170	1
24	-1	9999	0	----	----	----	140 155 170	1

NOTES

A note number of -1 prevents an LED from being drawn.

A note number of -2 initially draws an LED using its "on" colour.

The "off" colour is not user-specifiable.

The Pixel offset (V) value is not currently used.

Not all hosts make use of the LC/MC LEDs' flashing state.

HOSTS

Apple Soundtrack Pro

Apple Soundtrack

Overlay

Line	Function	Line	Function	Line	Function
0	OFF	59	(unused) V-Select Ch 1	118	(unused) Marker
1	PASS THROUGH	60	(unused) V-Select Ch 2	119	(unused) Nudge
2	-	61	(unused) V-Select Ch 3	120	Cycle
3	Fader Ch 1	62	(unused) V-Select Ch 4	121	(unused) Drop
4	Fader Ch 2	63	(unused) V-Select Ch 5	122	(unused) Replace
5	Fader Ch 3	64	(unused) V-Select Ch 6	123	(unused) Click
6	Fader Ch 4	65	(unused) V-Select Ch 7	124	(unused) Solo
7	Fader Ch 5	66	(unused) V-Select Ch 8	125	-
8	Fader Ch 6	67	(unused) -	126	Rewind
9	Fader Ch 7	68	(unused) Assign: Track	127	Fast Fwd
10	Fader Ch 8	69	(unused) Assign: Send	128	Stop
11	(unused) Fader Master	70	(unused) Assign: Pan	129	Play
12	-	71	(unused) Assign: Plug-In	130	Record
13	V-Pot Ch 1	72	(unused) Assign: EQ	131	-
14	V-Pot Ch 2	73	(unused) Assign: Instrument	132	Up
15	V-Pot Ch 3	74	(unused) -	133	Down
16	V-Pot Ch 4	75	Bank Left	134	Left
17	V-Pot Ch 5	76	Bank Right	135	Right
18	V-Pot Ch 6	77	(unused) Channel Left	136	(unused) Zoom
19	V-Pot Ch 7	78	(unused) Channel Right	137	(unused) Scrub
20	V-Pot Ch 8	79	(unused) Flip	138	-
21	Jogwheel	80	(unused) Global View	139	(unused) Footswitch 1
22	-	81	(unused) -	140	(unused) Footswitch 2
23	Record Ch 1	82	(unused) Display: Name-Value	141	(unused) -
24	Record Ch 2	83	(unused) Display: SMPTE/Beats	142	Fader Touch Ch 1
25	Record Ch 3	84	-	143	Fader Touch Ch 2
26	Record Ch 4	85	F1	144	Fader Touch Ch 3
27	Record Ch 5	86	F2	145	Fader Touch Ch 4
28	Record Ch 6	87	F3	146	Fader Touch Ch 5
29	Record Ch 7	88	F4	147	Fader Touch Ch 6
30	Record Ch 8	89	F5	148	Fader Touch Ch 7
31	-	90	F6	149	Fader Touch Ch 8
32	Solo Ch 1	91	F7	150	(unused) Fader Touch Master
33	Solo Ch 2	92	F8	151	-
34	Solo Ch 3	93	-	152	Bypass Notes & CCs
35	Solo Ch 4	94	(unused) Global: Midi Tracks	153	Bypass Notes
36	Solo Ch 5	95	(unused) Global: Inputs	154	Bypass CCs
37	Solo Ch 6	96	(unused) Global: Audio Tracks	155	Modifier
38	Solo Ch 7	97	(unused) Global: Audio Instr	156	Host Select
39	Solo Ch 8	98	(unused) Global: Aux	157	-
40	-	99	(unused) Global: Busses	158	Mode Rotate Up
41	Mute Ch 1	100	(unused) Global: Outputs	159	Mode Rotate Down
42	Mute Ch 2	101	(unused) Global: User	160	Mode: Select
43	Mute Ch 3	102	(unused) -	161	Mode: Mute
44	Mute Ch 4	103	(unused) Modifier: Shift	162	Mode: Solo
45	Mute Ch 5	104	(unused) Modifier: Option	163	Mode: Record
46	Mute Ch 6	105	(unused) Modifier: Control	164	Mode: Function
47	Mute Ch 7	106	(unused) Modifier: Cmd/Alt	165	(unused) Mode: Transport
48	Mute Ch 8	107	(unused) Automation: Read/Off	166	(unused) Mode: F1-F8
49	-	108	(unused) Automation: Write	167	(unused) Mode: Global Views
50	Select Ch 1	109	(unused) Automation: Trim	168	(unused) Mode: Fader Touch
51	Select Ch 2	110	(unused) Automation: Touch	169	(unused) Mode: User
52	Select Ch 3	111	(unused) Automation: Latch		
53	Select Ch 4	112	(unused) Group		
54	Select Ch 5	113	Utilities: Save		
55	Select Ch 6	114	Utilities: Undo		
56	Select Ch 7	115	(unused) Utilities: Cancel		
57	Select Ch 8	116	(unused) Utilities: Enter		
58	-	117	-		

HOSTS

Apple Soundtrack Pro

Modes

Mode number	Mode name	Mode character	Pixel offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
1	select	*	9	11	50	Select Ch 1
				12	51	Select Ch 2
				13	52	Select Ch 3
				14	53	Select Ch 4
				15	54	Select Ch 5
				16	55	Select Ch 6
				17	56	Select Ch 7
				18	57	Select Ch 8
2	mute	M	12	21	41	Mute Ch 1
				22	42	Mute Ch 2
				23	43	Mute Ch 3
				24	44	Mute Ch 4
				25	45	Mute Ch 5
				26	46	Mute Ch 6
				27	47	Mute Ch 7
				28	48	Mute Ch 8
3	solo	S	15	31	32	Solo Ch 1
				32	33	Solo Ch 2
				33	34	Solo Ch 3
				34	35	Solo Ch 4
				35	36	Solo Ch 5
				36	37	Solo Ch 6
				37	38	Solo Ch 7
				38	39	Solo Ch 8
4	record	R	8	41	23	Record Ch 1
				42	24	Record Ch 2
				43	25	Record Ch 3
				44	26	Record Ch 4
				45	27	Record Ch 5
				46	28	Record Ch 6
				47	29	Record Ch 7
				48	30	Record Ch 8
5	function	F	4	51	85	F1
				52	86	F2
				53	87	F3
				54	88	F4
				55	89	F5
				56	90	F6
				57	91	F7
				58	92	F8
6	select	*	9	61	50	Select Ch 1
				62	51	Select Ch 2
				63	52	Select Ch 3
				64	53	Select Ch 4
				65	54	Select Ch 5
				66	55	Select Ch 6
				67	56	Select Ch 7
				68	57	Select Ch 8
7	mute	M	12	71	41	Mute Ch 1
				72	42	Mute Ch 2
				73	43	Mute Ch 3
				74	44	Mute Ch 4
				75	45	Mute Ch 5
				76	46	Mute Ch 6
				77	47	Mute Ch 7
				78	48	Mute Ch 8

HOSTS

Apple Soundtrack Pro

Mode number	Full name	Single character	Display offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
8	solo	S	15	81	32	Solo Ch 1
				82	33	Solo Ch 2
				83	34	Solo Ch 3
				84	35	Solo Ch 4
				85	36	Solo Ch 5
				86	37	Solo Ch 6
				87	38	Solo Ch 7
				88	39	Solo Ch 8
9	record	R	8	91	23	Record Ch 1
				92	24	Record Ch 2
				93	25	Record Ch 3
				94	26	Record Ch 4
				95	27	Record Ch 5
				96	28	Record Ch 6
				97	29	Record Ch 7
				98	30	Record Ch 8
10	function	F	4	101	85	F1
				102	86	F2
				103	87	F3
				104	88	F4
				105	89	F5
				106	90	F6
				107	91	F7
				108	92	F8

HOSTS

Apple Soundtrack Pro

Modifier

Function number	Modifier + Function number	Function name	Modifier + Function name
3	3	Fader Ch 1	Fader Ch 1 — Fine resolution
4	4	Fader Ch 2	Fader Ch 2 — Fine resolution
5	5	Fader Ch 3	Fader Ch 3 — Fine resolution
6	6	Fader Ch 4	Fader Ch 4 — Fine resolution
7	7	Fader Ch 5	Fader Ch 5 — Fine resolution
8	8	Fader Ch 6	Fader Ch 6 — Fine resolution
9	9	Fader Ch 7	Fader Ch 7 — Fine resolution
10	10	Fader Ch 8	Fader Ch 8 — Fine resolution
13	13	V-Pot Ch 1	V-Pot Ch 1 — no output (non-endless), Jogwheel (endless)
14	14	V-Pot Ch 2	V-Pot Ch 2 — no output (non-endless), Jogwheel (endless)
15	15	V-Pot Ch 3	V-Pot Ch 3 — no output (non-endless), Jogwheel (endless)
16	16	V-Pot Ch 4	V-Pot Ch 4 — no output (non-endless), Jogwheel (endless)
17	17	V-Pot Ch 5	V-Pot Ch 5 — no output (non-endless), Jogwheel (endless)
18	18	V-Pot Ch 6	V-Pot Ch 6 — no output (non-endless), Jogwheel (endless)
19	19	V-Pot Ch 7	V-Pot Ch 7 — no output (non-endless), Jogwheel (endless)
20	20	V-Pot Ch 8	V-Pot Ch 8 — no output (non-endless), Jogwheel (endless)
50	160	Select Ch 1	Mode: Select
51	161	Select Ch 2	Mode: Mute
52	162	Select Ch 3	Mode: Solo
53	163	Select Ch 4	Mode: Record
54	164	Select Ch 5	Mode: Function
75	156	Bank Left	Host Select
158	158	Mode Rotate Up	Mode Rotate Up — Modes 6–10

NOTES

Functions not listed above do not have Modifier combinations defined, ie they modify to themselves.

Fader, V-Pot and Jogwheel modifier combinations are not user-specifiable via the *Modifier* file.

Modifier + Bypass combinations are reserved for use by Controller modules.

Suggestions for additional default Modifier combinations are welcome.

HOSTS

Apple Soundtrack Pro

LEDs

LED number	LC/MC note number	Pixel offset (H)	Pixel offset (V)	Text off	Text flash	Text on	RGB on	Allow scaling
1	-2	9	0	Soundtrack	Soundtrack	Soundtrack	95 102 110	0
2	-1	9999	0	----	----	----	140 155 170	1
3	-1	9999	0	----	----	----	140 155 170	1
4	-1	9999	0	----	----	----	140 155 170	1
5	-1	9999	0	----	----	----	140 155 170	1
6	-1	9999	0	----	----	----	140 155 170	1
7	-1	9999	0	----	----	----	140 155 170	1
8	-1	9999	0	----	----	----	140 155 170	1
9	-1	9999	0	----	----	----	140 155 170	1
10	-1	9999	0	----	----	----	140 155 170	1
11	-1	9999	0	----	----	----	140 155 170	1
12	-1	9999	0	----	----	----	140 155 170	1
13	-1	9999	0	----	----	----	140 155 170	1
14	-1	9999	0	----	----	----	140 155 170	1
15	-1	9999	0	----	----	----	140 155 170	1
16	-1	9999	0	----	----	----	140 155 170	1
17	-1	9999	0	----	----	----	140 155 170	1
18	-1	9999	0	----	----	----	140 155 170	1
19	-1	9999	0	----	----	----	140 155 170	1
20	-1	9999	0	----	----	----	140 155 170	1
21	-1	9999	0	----	----	----	140 155 170	1
22	-1	9999	0	----	----	----	140 155 170	1
23	-1	9999	0	----	----	----	140 155 170	1
24	-1	9999	0	----	----	----	140 155 170	1

NOTES

A note number of -1 prevents an LED from being drawn.

A note number of -2 initially draws an LED using its "on" colour.

The "off" colour is not user-specifiable.

The Pixel offset (V) value is not currently used.

Not all hosts make use of the LC/MC LEDs' flashing state.

HOSTS

Apple/Emagic Logic

Apple/Emagic Logic

Overlay

Line	Function	Line	Function	Line	Function
0	OFF	59	V-Select Ch 1	118	Marker
1	PASS THROUGH	60	V-Select Ch 2	119	Nudge
2	-	61	V-Select Ch 3	120	Cycle
3	Fader Ch 1	62	V-Select Ch 4	121	Drop
4	Fader Ch 2	63	V-Select Ch 5	122	Replace
5	Fader Ch 3	64	V-Select Ch 6	123	Click
6	Fader Ch 4	65	V-Select Ch 7	124	Solo
7	Fader Ch 5	66	V-Select Ch 8	125	-
8	Fader Ch 6	67	-	126	Rewind
9	Fader Ch 7	68	Assign: Track	127	Fast Fwd
10	Fader Ch 8	69	Assign: Send	128	Stop
11	Fader Master	70	Assign: Pan	129	Play
12	-	71	Assign: Plug-In	130	Record
13	V-Pot Ch 1	72	Assign: EQ	131	-
14	V-Pot Ch 2	73	Assign: Instrument	132	Cursor Up
15	V-Pot Ch 3	74	-	133	Cursor Down
16	V-Pot Ch 4	75	Bank Left	134	Cursor Left
17	V-Pot Ch 5	76	Bank Right	135	Cursor Right
18	V-Pot Ch 6	77	Channel Left	136	Zoom
19	V-Pot Ch 7	78	Channel Right	137	Scrub
20	V-Pot Ch 8	79	Flip	138	-
21	Jogwheel	80	Global View	139	Footswitch 1
22	-	81	-	140	Footswitch 2
23	Record Ch 1	82	Display: Name-Value	141	-
24	Record Ch 2	83	Display: SMPTE/Beats	142	Fader Touch Ch 1
25	Record Ch 3	84	-	143	Fader Touch Ch 2
26	Record Ch 4	85	F1	144	Fader Touch Ch 3
27	Record Ch 5	86	F2	145	Fader Touch Ch 4
28	Record Ch 6	87	F3	146	Fader Touch Ch 5
29	Record Ch 7	88	F4	147	Fader Touch Ch 6
30	Record Ch 8	89	F5	148	Fader Touch Ch 7
31	-	90	F6	149	Fader Touch Ch 8
32	Solo Ch 1	91	F7	150	Fader Touch Master
33	Solo Ch 2	92	F8	151	-
34	Solo Ch 3	93	-	152	Bypass Notes & CCs
35	Solo Ch 4	94	Global: Midi Tracks	153	Bypass Notes
36	Solo Ch 5	95	Global: Inputs	154	Bypass CCs
37	Solo Ch 6	96	Global: Audio Tracks	155	Modifier
38	Solo Ch 7	97	Global: Audio Instruments	156	Host Select
39	Solo Ch 8	98	Global: Aux	157	-
40	-	99	Global: Busses	158	Mode Rotate Up
41	Mute Ch 1	100	Global: Outputs	159	Mode Rotate Down
42	Mute Ch 2	101	Global: User	160	Mode: Select
43	Mute Ch 3	102	-	161	Mode: Mute
44	Mute Ch 4	103	Modifier: Shift	162	Mode: Solo
45	Mute Ch 5	104	Modifier: Option	163	Mode: Record
46	Mute Ch 6	105	Modifier: Control	164	Mode: V-Select
47	Mute Ch 7	106	Modifier: Command/Alt	165	Mode: Transport
48	Mute Ch 8	107	Automation: Read/Off	166	Mode: F1-F8
49	-	108	Automation: Write	167	Mode: Global Views
50	Select Ch 1	109	Automation: Trim	168	Mode: Fader Touch
51	Select Ch 2	110	Automation: Touch	169	Mode: User
52	Select Ch 3	111	Automation: Latch		
53	Select Ch 4	112	Group		
54	Select Ch 5	113	Utilities: Save		
55	Select Ch 6	114	Utilities: Undo		
56	Select Ch 7	115	Utilities: Cancel		
57	Select Ch 8	116	Utilities: Enter		
58	-	117	-		

HOSTS

Apple/Emagic Logic

Modes

Mode number	Mode name	Mode character	Pixel offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
1	select	*	9	11	50	Select Ch 1
				12	51	Select Ch 2
				13	52	Select Ch 3
				14	53	Select Ch 4
				15	54	Select Ch 5
				16	55	Select Ch 6
				17	56	Select Ch 7
				18	57	Select Ch 8
2	mute	M	12	21	41	Mute Ch 1
				22	42	Mute Ch 2
				23	43	Mute Ch 3
				24	44	Mute Ch 4
				25	45	Mute Ch 5
				26	46	Mute Ch 6
				27	47	Mute Ch 7
				28	48	Mute Ch 8
3	solo	S	15	31	32	Solo Ch 1
				32	33	Solo Ch 2
				33	34	Solo Ch 3
				34	35	Solo Ch 4
				35	36	Solo Ch 5
				36	37	Solo Ch 6
				37	38	Solo Ch 7
				38	39	Solo Ch 8
4	record	R	8	41	23	Record Ch 1
				42	24	Record Ch 2
				43	25	Record Ch 3
				44	26	Record Ch 4
				45	27	Record Ch 5
				46	28	Record Ch 6
				47	29	Record Ch 7
				48	30	Record Ch 8
5	vselect	V	5	51	59	V-Select Ch 1
				52	60	V-Select Ch 2
				53	61	V-Select Ch 3
				54	62	V-Select Ch 4
				55	63	V-Select Ch 5
				56	64	V-Select Ch 6
				57	65	V-Select Ch 7
				58	66	V-Select Ch 8
6	transpt	T	7	61	126	Rewind
				62	127	Fast Forward
				63	128	Stop
				64	129	Play
				65	130	Record
				66	120	Cycle
				67	121	Drop
				68	122	Replace
7	function	F	4	71	85	F1
				72	86	F2
				73	87	F3
				74	88	F4
				75	89	F5
				76	90	F6
				77	91	F7
				78	92	F8

HOSTS

Apple/Emagic Logic

Mode number	Full name	Single character	Display offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
8	global	G	9	81	94	Global: Midi tracks
				82	95	Global: Inputs
				83	96	Global: Audio tracks
				84	97	Global: Audio Instruments
				85	98	Global: Aux
				86	99	Global: Busses
				87	100	Global: Outputs
				88	101	Global: User
9	touch	t	10	91	142	Fader Touch Ch 1
				92	143	Fader Touch Ch 2
				93	144	Fader Touch Ch 3
				94	145	Fader Touch Ch 4
				95	146	Fader Touch Ch 5
				96	147	Fader Touch Ch 6
				97	148	Fader Touch Ch 7
				98	149	Fader Touch Ch 8
10	user	U	15	101	118	Marker
				102	119	Nudge
				103	123	Click
				104	124	Solo
				105	104	Returns
				106	105	Modifier: Option
				107	106	Modifier: Control
				108	82	Modifier: Command

HOSTS

Apple/Emagic Logic

Modifier

Function number	Modifier + Function number	Function name	Modifier + Function name
3	3	Fader Ch 1	Fader Ch 1 — Fine resolution
4	4	Fader Ch 2	Fader Ch 2 — Fine resolution
5	5	Fader Ch 3	Fader Ch 3 — Fine resolution
6	6	Fader Ch 4	Fader Ch 4 — Fine resolution
7	7	Fader Ch 5	Fader Ch 5 — Fine resolution
8	8	Fader Ch 6	Fader Ch 6 — Fine resolution
9	9	Fader Ch 7	Fader Ch 7 — Fine resolution
10	10	Fader Ch 8	Fader Ch 8 — Fine resolution
11	11	Fader Master	Fader Master — Fine resolution
13	13	V-Pot Ch 1	V-Pot Ch 1 — no output (non-endless), Jogwheel (endless)
14	14	V-Pot Ch 2	V-Pot Ch 2 — no output (non-endless), Jogwheel (endless)
15	15	V-Pot Ch 3	V-Pot Ch 3 — no output (non-endless), Jogwheel (endless)
16	16	V-Pot Ch 4	V-Pot Ch 4 — no output (non-endless), Jogwheel (endless)
17	17	V-Pot Ch 5	V-Pot Ch 5 — no output (non-endless), Jogwheel (endless)
18	18	V-Pot Ch 6	V-Pot Ch 6 — no output (non-endless), Jogwheel (endless)
19	19	V-Pot Ch 7	V-Pot Ch 7 — no output (non-endless), Jogwheel (endless)
20	20	V-Pot Ch 8	V-Pot Ch 8 — no output (non-endless), Jogwheel (endless)
50	160	Select Ch 1	Mode: Select
51	161	Select Ch 2	Mode: Mute
52	162	Select Ch 3	Mode: Solo
53	163	Select Ch 4	Mode: Record
54	164	Select Ch 5	Mode: V-Select
55	165	Select Ch 6	Mode: Transport
56	166	Select Ch 7	Mode: F1-F8
57	167	Select Ch 8	Mode: Global
75	156	Bank Left	Host Select
158	158	Mode Rotate Up	Mode Rotate Up — Modes 6–10

NOTES

Functions not listed above do not have Modifier combinations defined, ie they modify to themselves.

Fader, V-Pot and Jogwheel modifier combinations are not user-specifiable via the *Modifier* file.

Modifier + Bypass combinations are reserved for use by Controller modules.

Suggestions for additional default Modifier combinations are welcome.

HOSTS

Apple/Emagic Logic

LEDs

LED number	LC/MC note number	Pixel offset (H)	Pixel offset (V)	Text off	Text flash	Text on	RGB on	Allow scaling
1	-2	9	0	Logic	Logic	Logic	95 102 110	0
2	50	51	0	flip	swp	dup	140 155 170	1
3	51	82	0	mix	arr	glo	140 155 170	1
4	84	115	0	mark	mark	mark	140 155 170	1
5	85	155	0	nudge	nudge	nudge	140 155 170	1
6	74	197	0	read	read	read	140 155 170	1
7	77	232	0	touch	touch	touch	140 155 170	1
8	75	275	0	write	write	write	140 155 170	1
9	78	316	0	latch	latch	latch	140 155 170	1
10	86	357	0	cyc	cyc	cyc	140 155 170	1
11	87	388	0	drop	drop	drop	140 155 170	1
12	88	425	0	repl	repl	repl	140 155 170	1
13	95	460	0	rec	rec	rec	140 155 170	1
14	90	488	0	solo	solo	solo	140 155 170	1
15	-1	9999	0	----	----	----	140 155 170	1
16	-1	9999	0	----	----	----	140 155 170	1
17	-1	9999	0	----	----	----	140 155 170	1
18	-1	9999	0	----	----	----	140 155 170	1
19	-1	9999	0	----	----	----	140 155 170	1
20	-1	9999	0	----	----	----	140 155 170	1
21	-1	9999	0	----	----	----	140 155 170	1
22	-1	9999	0	----	----	----	140 155 170	1
23	-1	9999	0	----	----	----	140 155 170	1
24	-1	9999	0	----	----	----	140 155 170	1

NOTES

A note number of -1 prevents an LED from being drawn.

A note number of -2 initially draws an LED using its "on" colour.

The "off" colour is not user-specifiable.

The Pixel offset (V) value is not currently used.

Not all hosts make use of the LC/MC LEDs' flashing state.

HOSTS

Propellerheads Reason

Propellerheads Reason

Overlay

Line	Function	Line	Function	Line	Function
0	OFF	59	(unused) V-Select Ch 1	118	Locator: Go To Left
1	PASS THROUGH	60	(unused) V-Select Ch 2	119	Locator: Go To Right
2	-	61	(unused) V-Select Ch 3	120	Jogwheel: Song position
3	Fader Ch 1	62	(unused) V-Select Ch 4	121	Jogwheel: Left Locator
4	Fader Ch 2	63	(unused) V-Select Ch 5	122	Jogwheel: Right Locator
5	Fader Ch 3	64	(unused) V-Select Ch 6	123	Loop On-Off
6	Fader Ch 4	65	(unused) V-Select Ch 7	124	(unused) Solo
7	Fader Ch 5	66	(unused) V-Select Ch 8	125	-
8	Fader Ch 6	67	(unused) -	126	Rewind
9	Fader Ch 7	68	Assign: Button 1	127	Fast Fwd
10	Fader Ch 8	69	Assign: Button 2	128	Stop
11	Fader Master	70	Assign: Pan	129	Play
12	-	71	Assign: Plug-Ins	130	Record
13	V-Pot Ch 1	72	Assign: EQ	131	-
14	V-Pot Ch 2	73	Assign: Dyn	132	Previous Track
15	V-Pot Ch 3	74	-	133	Next Track
16	V-Pot Ch 4	75	(unused) Bank Left	134	Previous Bar
17	V-Pot Ch 5	76	(unused) Bank Right	135	Next Bar
18	V-Pot Ch 6	77	Channel Left	136	Jogwheel: Coarse
19	V-Pot Ch 7	78	Channel Right	137	Jogwheel: Fine
20	V-Pot Ch 8	79	(unused) Flip	138	(unused) -
21	Jogwheel	80	(unused) Global View	139	(unused) Footswitch 1
22	-	81	(unused) -	140	(unused) Footswitch 2
23	(unused) Record Ch 1	82	(unused) Display: Name/Value	141	-
24	(unused) Record Ch 2	83	(unused) Display: SMPTE/Beats	142	Fader Touch Ch 1
25	(unused) Record Ch 3	84	-	143	Fader Touch Ch 2
26	(unused) Record Ch 4	85	F1	144	Fader Touch Ch 3
27	(unused) Record Ch 5	86	F2	145	Fader Touch Ch 4
28	(unused) Record Ch 6	87	F3	146	Fader Touch Ch 5
29	(unused) Record Ch 7	88	F4	147	Fader Touch Ch 6
30	(unused) Record Ch 8	89	F5	148	Fader Touch Ch 7
31	(unused) -	90	F6	149	Fader Touch Ch 8
32	Solo Ch 1	91	F7	150	Fader Touch Master
33	Solo Ch 2	92	F8	151	-
34	Solo Ch 3	93	-	152	Bypass All
35	Solo Ch 4	94	F9	153	Bypass Notes
36	Solo Ch 5	95	F10	154	Bypass CCs
37	Solo Ch 6	96	F11	155	Modifier
38	Solo Ch 7	97	F12	156	Host Select
39	Solo Ch 8	98	F13	157	-
40	-	99	F14	158	Mode Rotate Up
41	Mute Ch 1	100	F15	159	Mode Rotate Down
42	Mute Ch 2	101	F16	160	Mode: Select
43	Mute Ch 3	102	-	161	Mode: Mute
44	Mute Ch 4	103	(unused) Modifier: Shift	162	Mode: Solo
45	Mute Ch 5	104	(unused) Modifier: Option	163	Mode: F1-F8
46	Mute Ch 6	105	(unused) Modifier: Control	164	Mode: F9-F16
47	Mute Ch 7	106	(unused) Modifier: Cmd-Alt	165	Mode: Transport
48	Mute Ch 8	107	Reset Automation Override	166	Mode: Locate
49	-	108	(unused) Automation: Write	167	(unused) Mode: Record
50	Select Ch 1	109	Undo	168	(unused) Mode: Vselect
51	Select Ch 2	110	(unused) Automation: Touch	169	(unused) Mode: Select
52	Select Ch 3	111	(unused) Automation: Latch		
53	Select Ch 4	112	Redo		
54	Select Ch 5	113	(unused) Save		
55	Select Ch 6	114	Click On-Off		
56	Select Ch 7	115	(unused) Cancel		
57	Select Ch 8	116	(unused) Enter		
58	-	117	-		

HOSTS

Propellerheads Reason

Modes

Mode number	Mode name	Mode character	Pixel offset	Mode + select index number	Select 1-8 function number	Select 1-8 function
1	select	*	9	11	50	Select Ch 1
				12	51	Select Ch 2
				13	52	Select Ch 3
				14	53	Select Ch 4
				15	54	Select Ch 5
				16	55	Select Ch 6
				17	56	Select Ch 7
				18	57	Select Ch 8
2	mute	M	12	21	41	Mute Ch 1
				22	42	Mute Ch 2
				23	43	Mute Ch 3
				24	44	Mute Ch 4
				25	45	Mute Ch 5
				26	46	Mute Ch 6
				27	47	Mute Ch 7
				28	48	Mute Ch 8
3	solo	S	15	31	32	Solo Ch 1
				32	33	Solo Ch 2
				33	34	Solo Ch 3
				34	35	Solo Ch 4
				35	36	Solo Ch 5
				36	37	Solo Ch 6
				37	38	Solo Ch 7
				38	39	Solo Ch 8
4	F1-F8	F	11	41	85	F1
				42	86	F2
				43	87	F3
				44	88	F4
				45	89	F5
				46	90	F6
				47	91	F7
				48	92	F8
5	F9-F16	f	8	51	94	F9
				52	95	F10
				53	96	F11
				54	97	F12
				55	98	F13
				56	99	F14
				57	100	F15
				58	101	F16
6	transpt	T	7	61	126	Rewind
				62	127	Fast Forward
				63	128	Stop
				64	129	Play
				65	130	Record
				66	134	Previous Bar
				67	135	Next Bar
				68	114	Click On-Off
7	locate	L	10	71	118	Locator: Go To Left
				72	119	Locator: Go To Right
				73	120	Jogwheel: Song position
				74	121	Jogwheel: Left locator
				75	122	Jogwheel: Right locator
				76	136	Jogwheel: Coarse
				77	137	Jogwheel: Fine
				78	107	Reset Automation Override

HOSTS

Propellerheads Reason

Mode number	Full name	Single character	Display offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
8	record	R	8	81	23	Record Ch 1
				82	24	Record Ch 2
				83	25	Record Ch 3
				84	26	Record Ch 4
				85	27	Record Ch 5
				86	28	Record Ch 6
				87	29	Record Ch 7
				88	30	Record Ch 8
9	vselect	V	5	91	59	V-Select Ch 1
				92	60	V-Select Ch 2
				93	61	V-Select Ch 3
				94	62	V-Select Ch 4
				95	63	V-Select Ch 5
				96	64	V-Select Ch 6
				97	65	V-Select Ch 7
				98	66	V-Select Ch 8
10	select	*	9	101	50	Select Ch 1
				102	51	Select Ch 2
				103	52	Select Ch 3
				104	53	Select Ch 4
				105	54	Select Ch 5
				106	55	Select Ch 6
				107	56	Select Ch 7
				108	57	Select Ch 8

HOSTS

Propellerheads Reason

Modifier

Function number	Modifier + Function number	Function name	Modifier + Function name
3	3	Fader Ch 1	Fader Ch 1 — Fine resolution
4	4	Fader Ch 2	Fader Ch 2 — Fine resolution
5	5	Fader Ch 3	Fader Ch 3 — Fine resolution
6	6	Fader Ch 4	Fader Ch 4 — Fine resolution
7	7	Fader Ch 5	Fader Ch 5 — Fine resolution
8	8	Fader Ch 6	Fader Ch 6 — Fine resolution
9	9	Fader Ch 7	Fader Ch 7 — Fine resolution
10	10	Fader Ch 8	Fader Ch 8 — Fine resolution
11	11	Fader Master	Fader Master — Fine resolution
13	13	V-Pot Ch 1	V-Pot Ch 1 — no output (non-endless), Jogwheel (endless)
14	14	V-Pot Ch 2	V-Pot Ch 2 — no output (non-endless), Jogwheel (endless)
15	15	V-Pot Ch 3	V-Pot Ch 3 — no output (non-endless), Jogwheel (endless)
16	16	V-Pot Ch 4	V-Pot Ch 4 — no output (non-endless), Jogwheel (endless)
17	17	V-Pot Ch 5	V-Pot Ch 5 — no output (non-endless), Jogwheel (endless)
18	18	V-Pot Ch 6	V-Pot Ch 6 — no output (non-endless), Jogwheel (endless)
19	19	V-Pot Ch 7	V-Pot Ch 7 — no output (non-endless), Jogwheel (endless)
20	20	V-Pot Ch 8	V-Pot Ch 8 — no output (non-endless), Jogwheel (endless)
50	160	Select Ch 1	Mode: Select
51	161	Select Ch 2	Mode: Mute
52	162	Select Ch 3	Mode: Solo
53	163	Select Ch 4	Mode: F1-F8
54	164	Select Ch 5	Mode: F9-F16
55	165	Select Ch 6	Mode: Transport
56	166	Select Ch 7	Mode: Locate
57	167	Select Ch 8	Mode: Record (Record Ch 1–8 not used in Reason)
77	156	Channel Left	Host Select
158	158	Mode Rotate Up	Mode Rotate Up — Modes 6–10

NOTES

Functions not listed above do not have Modifier combinations defined, ie they modify to themselves.

Fader, V-Pot and Jogwheel modifier combinations are not user-specifiable via the *Modifier* file.

Modifier + Bypass combinations are reserved for use by Controller modules.

Suggestions for additional default Modifier combinations are welcome.

HOSTS

Propellerheads Reason

LEDs

LED number	LC/MC note number	Pixel offset (H)	Pixel offset (V)	Text off	Text flash	Text on	RGB on	Allow scaling
1	-2	9	0	Reason	Reason	Reason	95 102 110	0
2	40	65	0	ass1	ass1	ass1	140 155 170	1
3	41	100	0	ass2	ass2	ass2	140 155 170	1
4	42	138	0	pan	pan	pan	140 155 170	1
5	43	169	0	plug	plug	plug	140 155 170	1
6	44	203	0	eq	eq	eq	140 155 170	1
7	45	228	0	dyn	dyn	dyn	140 155 170	1
8	89	260	0	loop	loop	loop	140 155 170	1
9	95	295	0	rec	rec	rec	140 155 170	1
10	86	327	0	song	song	song	140 155 170	1
11	87	364	0	left	left	left	140 155 170	1
12	88	397	0	right	right	right	140 155 170	1
13	100	438	0	coarse	coarse	coarse	140 155 170	1
14	101	487	0	fine	fine	fine	140 155 170	1
15	-1	9999	0	----	----	----	140 155 170	1
16	-1	9999	0	----	----	----	140 155 170	1
17	-1	9999	0	----	----	----	140 155 170	1
18	-1	9999	0	----	----	----	140 155 170	1
19	-1	9999	0	----	----	----	140 155 170	1
20	-1	9999	0	----	----	----	140 155 170	1
21	-1	9999	0	----	----	----	140 155 170	1
22	-1	9999	0	----	----	----	140 155 170	1
23	-1	9999	0	----	----	----	140 155 170	1
24	-1	9999	0	----	----	----	140 155 170	1

NOTES

A note number of -1 prevents an LED from being drawn.

A note number of -2 initially draws an LED using its "on" colour.

The "off" colour is not user-specifiable.

The Pixel offset (V) value is not currently used.

Not all hosts make use of the LC/MC LEDs' flashing state.

HOSTS

RME TotalMix

RME TotalMix

Overlay

Line	Function	Line	Function	Line	Function
0	OFF	59	V-Select Ch 1	118	(unused) Marker
1	PASS THROUGH	60	V-Select Ch 2	119	(unused) Nudge
2	-	61	V-Select Ch 3	120	(unused) Cycle
3	Fader Ch 1	62	V-Select Ch 4	121	(unused) Drop
4	Fader Ch 2	63	V-Select Ch 5	122	(unused) Replace
5	Fader Ch 3	64	V-Select Ch 6	123	(unused) Click
6	Fader Ch 4	65	V-Select Ch 7	124	(unused) Solo
7	Fader Ch 5	66	V-Select Ch 8	125	-
8	Fader Ch 6	67	-	126	Channel Left
9	Fader Ch 7	68	Row Down	127	Channel Right
10	Fader Ch 8	69	Row Up	128	Dim Main Monitor
11	Fader Master	70	Mono Main Monitor	129	Talkback
12	-	71	Master Solo	130	(unused) Record
13	V-Pot Ch 1	72	Master Mute	131	-
14	V-Pot Ch 2	73	Unity Gain (+ Select Ch)	132	Row Up
15	V-Pot Ch 3	74	-	133	Row Down
16	V-Pot Ch 4	75	Bank Left	134	Bank Left
17	V-Pot Ch 5	76	Bank Right	135	Bank Right
18	V-Pot Ch 6	77	Channel Left	136	(unused) Zoom
19	V-Pot Ch 7	78	Channel Right	137	(unused) Scrub
20	V-Pot Ch 8	79	(unused) Flip	138	(unused)
21	(unused) Jogwheel	80	(unused) Global View	139	(unused) Footswitch 1
22	-	81	(unused) -	140	(unused) Footswitch 2
23	Select Out Bus 1	82	(unused) Display: Name/Value	141	-
24	Select Out Bus 2	83	(unused) Display: SMPTE/Beats	142	Fader Touch Ch 1
25	Select Out Bus 3	84	-	143	Fader Touch Ch 2
26	Select Out Bus 4	85	Preset 1	144	Fader Touch Ch 3
27	Select Out Bus 5	86	Preset 2	145	Fader Touch Ch 4
28	Select Out Bus 6	87	Preset 3	146	Fader Touch Ch 5
29	Select Out Bus 7	88	Preset 4	147	Fader Touch Ch 6
30	Select Out Bus 8	89	Preset 5	148	Fader Touch Ch 7
31	-	90	Preset 6	149	Fader Touch Ch 8
32	Solo Ch 1	91	Preset 7	150	Fader Touch Master
33	Solo Ch 2	92	Preset 8	151	-
34	Solo Ch 3	93	-	152	Bypass All
35	Solo Ch 4	94	Select Main Monitor	153	Bypass Notes
36	Solo Ch 5	95	Monitor Phones 1	154	Bypass CCs
37	Solo Ch 6	96	Monitor Phones 2	155	Modifier
38	Solo Ch 7	97	Monitor Phones 3	156	Host Select
39	Solo Ch 8	98	(unused) Global: Aux	157	-
40	-	99	(unused) Global: Busses	158	Mode Rotate Up
41	Mute Ch 1	100	(unused) Global: Outputs	159	Mode Rotate Down
42	Mute Ch 2	101	(unused) Global: User	160	Mode: Select
43	Mute Ch 3	102	(unused) -	161	Mode: Mute
44	Mute Ch 4	103	(unused) Modifier: Shift	162	Mode: Solo
45	Mute Ch 5	104	(unused) Modifier: Option	163	Mode: Record
46	Mute Ch 6	105	(unused) Modifier: Control	164	Mode: Vselect
47	Mute Ch 7	106	(unused) Modifier: Command/Alt	165	Mode: Presets
48	Mute Ch 8	107	(unused) Automation: Read/Off	166	(unused) Mode: Mute
49	-	108	(unused) Automation: Write	167	(unused) Mode: Solo
50	Select Ch 1	109	(unused) Automation: Trim	168	(unused) Mode: Record
51	Select Ch 2	110	(unused) Automation: Touch	169	(unused) Mode: Vselect
52	Select Ch 3	111	(unused) Automation: Latch		
53	Select Ch 4	112	(unused) Group		
54	Select Ch 5	113	(unused) Utilities: Save		
55	Select Ch 6	114	(unused) Utilities: Undo		
56	Select Ch 7	115	(unused) Utilities: Cancel		
57	Select Ch 8	116	(unused) Utilities: Enter		
58	-	117	(unused) -		

HOSTS

RME Total/Mix

Modes

Mode number	Mode name	Mode character	Pixel offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
1	select	*	9	11	50	Select Ch 1
				12	51	Select Ch 2
				13	52	Select Ch 3
				14	53	Select Ch 4
				15	54	Select Ch 5
				16	55	Select Ch 6
				17	56	Select Ch 7
				18	57	Select Ch 8
2	mute	M	12	21	41	Mute Ch 1
				22	42	Mute Ch 2
				23	43	Mute Ch 3
				24	44	Mute Ch 4
				25	45	Mute Ch 5
				26	46	Mute Ch 6
				27	47	Mute Ch 7
				28	48	Mute Ch 8
3	solo	S	15	31	32	Solo Ch 1
				32	33	Solo Ch 2
				33	34	Solo Ch 3
				34	35	Solo Ch 4
				35	36	Solo Ch 5
				36	37	Solo Ch 6
				37	38	Solo Ch 7
				38	39	Solo Ch 8
4	outbus	O	8	41	23	Select Out Bus 1
				42	24	Select Out Bus 2
				43	25	Select Out Bus 3
				44	26	Select Out Bus 4
				45	27	Select Out Bus 5
				46	28	Select Out Bus 6
				47	29	Select Out Bus 7
				48	30	Select Out Bus 8
5	vselect	V	5	51	59	V-Select Ch 1
				52	60	V-Select Ch 2
				53	61	V-Select Ch 3
				54	62	V-Select Ch 4
				55	63	V-Select Ch 5
				56	64	V-Select Ch 6
				57	65	V-Select Ch 7
				58	66	V-Select Ch 8
6	presets	P	5	61	85	Preset 1
				62	86	Preset 2
				63	87	Preset 3
				64	88	Preset 4
				65	89	Preset 5
				66	90	Preset 6
				67	91	Preset 7
				68	92	Preset 8
7	mute	M	12	71	41	Mute Ch 1
				72	42	Mute Ch 2
				73	43	Mute Ch 3
				74	44	Mute Ch 4
				75	45	Mute Ch 5
				76	46	Mute Ch 6
				77	47	Mute Ch 7
				78	48	Mute Ch 8

HOSTS

RME Total/Mix

Mode number	Full name	Single character	Display offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
8	solo	S	15	81	32	Solo Ch 1
				82	33	Solo Ch 2
				83	34	Solo Ch 3
				84	35	Solo Ch 4
				85	36	Solo Ch 5
				86	37	Solo Ch 6
				87	38	Solo Ch 7
				88	39	Solo Ch 8
9	outbus	O	8	91	23	Select Out Bus 1
				92	24	Select Out Bus 2
				93	25	Select Out Bus 3
				94	26	Select Out Bus 4
				95	27	Select Out Bus 5
				96	28	Select Out Bus 6
				97	29	Select Out Bus 7
				98	30	Select Out Bus 8
10	vselect	V	5	101	59	V-Select Ch 1
				102	60	V-Select Ch 2
				103	61	V-Select Ch 3
				104	62	V-Select Ch 4
				105	63	V-Select Ch 5
				106	64	V-Select Ch 6
				107	64	V-Select Ch 7
				108	66	V-Select Ch 8

HOSTS

RME TotalMix

Modifier

Function number	Modifier + Function number	Function name	Modifier + Function name
3	3	Fader Ch 1	Fader Ch 1 — Fine resolution
4	4	Fader Ch 2	Fader Ch 2 — Fine resolution
5	5	Fader Ch 3	Fader Ch 3 — Fine resolution
6	6	Fader Ch 4	Fader Ch 4 — Fine resolution
7	7	Fader Ch 5	Fader Ch 5 — Fine resolution
8	8	Fader Ch 6	Fader Ch 6 — Fine resolution
9	9	Fader Ch 7	Fader Ch 7 — Fine resolution
10	10	Fader Ch 8	Fader Ch 8 — Fine resolution
11	11	Fader Master	Fader Master — Fine resolution
13	13	V-Pot Ch 1	V-Pot Ch 1 — no output (non-endless)
14	14	V-Pot Ch 2	V-Pot Ch 2 — no output (non-endless)
15	15	V-Pot Ch 3	V-Pot Ch 3 — no output (non-endless)
16	16	V-Pot Ch 4	V-Pot Ch 4 — no output (non-endless)
17	17	V-Pot Ch 5	V-Pot Ch 5 — no output (non-endless)
18	18	V-Pot Ch 6	V-Pot Ch 6 — no output (non-endless)
19	19	V-Pot Ch 7	V-Pot Ch 7 — no output (non-endless)
20	20	V-Pot Ch 8	V-Pot Ch 8 — no output (non-endless)
50	160	Select Ch 1	Mode: Select
51	161	Select Ch 2	Mode: Mute
52	162	Select Ch 3	Mode: Solo
53	163	Select Ch 4	Mode: Out Bus
54	164	Select Ch 5	Mode: V-Select
55	165	Select Ch 6	Mode: Presets
56	166	Select Ch 7	Mode: Mute
57	167	Select Ch 8	Mode: Solo
75	156	Bank Left	Host Select
158	158	Mode Rotate Up	Mode Rotate Up — Modes 6–10

NOTES

Functions not listed above do not have Modifier combinations defined, ie they modify to themselves.

Fader, V-Pot and Jogwheel modifier combinations are not user-specifiable via the *Modifier* file.

TotalMix does not make use of the Jogwheel.

Modifier + Bypass combinations are reserved for use by Controller modules.

Suggestions for additional default Modifier combinations are welcome.

HOSTS

RME TotalMix

LEDs

LED number	LC/MC note number	Pixel offset (H)	Pixel offset (V)	Text off	Text flash	Text on	RGB on	Allow scaling
1	-2	9	0	"RME Totalmix"	"RME Totalmix"	"RME Totalmix"	95 102 110	0
2	44	168	0	mute	mute	mute	140 155 170	1
3	43	223	0	solo	solo	solo	140 155 170	1
4	94	333	0	talk	talk	talk	140 155 170	1
5	42	388	0	mono	mono	mono	140 155 170	1
6	93	450	0	dim	dim	dim	140 155 170	1
7	-1	9999	0	----	----	----	140 155 170	1
8	-1	9999	0	----	----	----	140 155 170	1
9	-1	9999	0	----	----	----	140 155 170	1
10	-1	9999	0	----	----	----	140 155 170	1
11	-1	9999	0	----	----	----	140 155 170	1
12	-1	9999	0	----	----	----	140 155 170	1
13	-1	9999	0	----	----	----	140 155 170	1
14	-1	9999	0	----	----	----	140 155 170	1
15	-1	9999	0	----	----	----	140 155 170	1
16	-1	9999	0	----	----	----	140 155 170	1
17	-1	9999	0	----	----	----	140 155 170	1
18	-1	9999	0	----	----	----	140 155 170	1
19	-1	9999	0	----	----	----	140 155 170	1
20	-1	9999	0	----	----	----	140 155 170	1
21	-1	9999	0	----	----	----	140 155 170	1
22	-1	9999	0	----	----	----	140 155 170	1
23	-1	9999	0	----	----	----	140 155 170	1
24	-1	9999	0	----	----	----	140 155 170	1

NOTES

A note number of -1 prevents an LED from being drawn.

A note number of -2 initially draws an LED using its "on" colour.

The "off" colour is not user-specifiable.

The Pixel offset (V) value is not currently used.

Not all hosts make use of the LC/MC LEDs' flashing state.

HOSTS

Steinberg Cubase/Nuendo

Steinberg Cubase/Nuendo

Overlay

Line	Function	Line	Function	Line	Function
0	OFF	59	V-Select Ch 1	118	Locator: Left
1	PASS THROUGH	60	V-Select Ch 2	119	Locator: Right
2	-	61	V-Select Ch 3	120	Cycle
3	Fader Ch 1	62	V-Select Ch 4	121	Punch
4	Fader Ch 2	63	V-Select Ch 5	122	Markers: Previous
5	Fader Ch 3	64	V-Select Ch 6	123	Markers: Add
6	Fader Ch 4	65	V-Select Ch 7	124	Markers: Next
7	Fader Ch 5	66	V-Select Ch 8	125	-
8	Fader Ch 6	67	-	126	Rewind
9	Fader Ch 7	68	Page Down	127	Fast Fwd
10	Fader Ch 8	69	Page Up	128	Stop
11	Fader Master	70	Fader Set: Pan	129	Play
12	-	71	Selected Ch: Plug-Ins	130	Record
13	V-Pot Ch 1	72	Selected Ch: EQ	131	-
14	V-Pot Ch 2	73	Selected Ch: FX Send (Dyn)	132	Cursor Up
15	V-Pot Ch 3	74	-	133	Cursor Down
16	V-Pot Ch 4	75	Bank Left	134	Cursor Left
17	V-Pot Ch 5	76	Bank Right	135	Cursor Right
18	V-Pot Ch 6	77	Channel Left	136	(unused) Zoom
19	V-Pot Ch 7	78	Channel Right	137	(unused) Scrub
20	V-Pot Ch 8	79	Flip	138	-
21	Jogwheel	80	Edit	139	Footswitch 1
22	-	81	-	140	Footswitch 2
23	Record Ch 1	82	Display: Name/Value	141	-
24	Record Ch 2	83	Display: SMPTE/Beats	142	Fader Touch Ch 1
25	Record Ch 3	84	-	143	Fader Touch Ch 2
26	Record Ch 4	85	F1	144	Fader Touch Ch 3
27	Record Ch 5	86	F2	145	Fader Touch Ch 4
28	Record Ch 6	87	F3	146	Fader Touch Ch 5
29	Record Ch 7	88	F4	147	Fader Touch Ch 6
30	Record Ch 8	89	F5	148	Fader Touch Ch 7
31	-	90	F6	149	Fader Touch Ch 8
32	Solo Ch 1	91	F7	150	Fader Touch Master
33	Solo Ch 2	92	F8	151	-
34	Solo Ch 3	93	-	152	Bypass All
35	Solo Ch 4	94	Fader Group 1	153	Bypass Notes
36	Solo Ch 5	95	Fader Group 2	154	Bypass CCs
37	Solo Ch 6	96	Fader Group 3	155	Modifier
38	Solo Ch 7	97	Fader Group 4	156	Host Select
39	Solo Ch 8	98	Fader Group 5	157	-
40	-	99	Fader Group 6	158	Mode Rotate Up
41	Mute Ch 1	100	Fader Group 7	159	Mode Rotate Down
42	Mute Ch 2	101	Fader Group 8	160	Mode: Select
43	Mute Ch 3	102	-	161	Mode: Mute
44	Mute Ch 4	103	Edit: Undo	162	Mode: Solo
45	Mute Ch 5	104	Edit: Redo	163	Mode: Record
46	Mute Ch 6	105	Project: Save	164	Mode: V-Select
47	Mute Ch 7	106	Project: Revert	165	Mode: Transport
48	Mute Ch 8	107	Automation: Read	166	Mode: Fader Groups
49	-	108	Automation: Write	167	Mode: Locate
50	Select Ch 1	109	Global: Send Effects	168	Mode: Fader Touch
51	Select Ch 2	110	Window: Project	169	Mode: F1-F8
52	Select Ch 3	111	Window: Mixer		
53	Select Ch 4	112	Motors		
54	Select Ch 5	113	Global: Instruments		
55	Select Ch 6	114	Global: Master Effects		
56	Select Ch 7	115	Solo Defeat		
57	Select Ch 8	116	Shift		
58	-	117	-		

HOSTS

Steinberg Cubase/Nuendo

Modes

Mode number	Mode name	Mode character	Pixel offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
1	select	*	9	11	50	Select Ch 1
				12	51	Select Ch 2
				13	52	Select Ch 3
				14	53	Select Ch 4
				15	54	Select Ch 5
				16	55	Select Ch 6
				17	56	Select Ch 7
				18	57	Select Ch 8
2	mute	M	12	21	41	Mute Ch 1
				22	42	Mute Ch 2
				23	43	Mute Ch 3
				24	44	Mute Ch 4
				25	45	Mute Ch 5
				26	46	Mute Ch 6
				27	47	Mute Ch 7
				28	48	Mute Ch 8
3	solo	S	15	31	32	Solo Ch 1
				32	33	Solo Ch 2
				33	34	Solo Ch 3
				34	35	Solo Ch 4
				35	36	Solo Ch 5
				36	37	Solo Ch 6
				37	38	Solo Ch 7
				38	39	Solo Ch 8
4	record	R	8	41	23	Arm Ch 1
				42	24	Arm Ch 2
				43	25	Arm Ch 3
				44	26	Arm Ch 4
				45	27	Arm Ch 5
				46	28	Arm Ch 6
				47	29	Arm Ch 7
				48	30	Arm Ch 8
5	vselect	V	5	51	59	V-Select Ch 1
				52	60	V-Select Ch 2
				53	61	V-Select Ch 3
				54	62	V-Select Ch 4
				55	63	V-Select Ch 5
				56	64	V-Select Ch 6
				57	65	V-Select Ch 7
				58	66	V-Select Ch 8
6	transpt	T	7	61	126	Rewind
				62	127	Fast Forward
				63	128	Stop
				64	129	Play
				65	130	Record
				66	120	Cycle
				67	121	Punch
				68	82	Display: Name/Value
7	fadergrp	F	5	71	94	Fader Group 1
				72	95	Fader Group 2
				73	96	Fader Group 3
				74	97	Fader Group 4
				75	98	Fader Group 5
				76	99	Fader Group 6
				77	100	Fader Group 7
				78	101	Fader Group 8

HOSTS

Steinberg Cubase/Nuendo

Mode number	Full name	Single character	Display offset	Mode + select index number	Select 1–8 function number	Select 1–8 function
8	locate	L	9	81	118	Locator: Left
				82	119	Locator: Right
				83	122	Markers: Previous
				84	123	Markers: Add
				85	124	Markers: Next
				86	0	(unused)
				87	107	Automation: Read
				88	108	Automation: Write
9	touch	t	10	91	142	Fader Touch Ch 1
				92	143	Fader Touch Ch 2
				93	144	Fader Touch Ch 3
				94	145	Fader Touch Ch 4
				95	146	Fader Touch Ch 5
				96	147	Fader Touch Ch 6
				97	148	Fader Touch Ch 7
				98	149	Fader Touch Ch 8
10	function	f	4	101	85	F1
				102	86	F2
				103	87	F3
				104	88	F4
				105	89	F5
				106	90	F6
				107	91	F7
				108	92	F8

HOSTS

Steinberg Cubase/Nuendo

Modifier

Function number	Modifier + Function number	Function name	Modifier + Function name
3	3	Fader Ch 1	Fader Ch 1 — Fine resolution
4	4	Fader Ch 2	Fader Ch 2 — Fine resolution
5	5	Fader Ch 3	Fader Ch 3 — Fine resolution
6	6	Fader Ch 4	Fader Ch 4 — Fine resolution
7	7	Fader Ch 5	Fader Ch 5 — Fine resolution
8	8	Fader Ch 6	Fader Ch 6 — Fine resolution
9	9	Fader Ch 7	Fader Ch 7 — Fine resolution
10	10	Fader Ch 8	Fader Ch 8 — Fine resolution
11	11	Fader Master	Fader Master — Fine resolution
13	13	V-Pot Ch 1	V-Pot Ch 1 — no output (non-endless), Jogwheel (endless)
14	14	V-Pot Ch 2	V-Pot Ch 2 — no output (non-endless), Jogwheel (endless)
15	15	V-Pot Ch 3	V-Pot Ch 3 — no output (non-endless), Jogwheel (endless)
16	16	V-Pot Ch 4	V-Pot Ch 4 — no output (non-endless), Jogwheel (endless)
17	17	V-Pot Ch 5	V-Pot Ch 5 — no output (non-endless), Jogwheel (endless)
18	18	V-Pot Ch 6	V-Pot Ch 6 — no output (non-endless), Jogwheel (endless)
19	19	V-Pot Ch 7	V-Pot Ch 7 — no output (non-endless), Jogwheel (endless)
20	20	V-Pot Ch 8	V-Pot Ch 8 — no output (non-endless), Jogwheel (endless)
50	160	Select Ch 1	Mode: Select
51	161	Select Ch 2	Mode: Mute
52	162	Select Ch 3	Mode: Solo
53	163	Select Ch 4	Mode: Record
54	164	Select Ch 5	Mode: V-Select
55	165	Select Ch 6	Mode: Transport
56	166	Select Ch 7	Mode: Fader Group
57	167	Select Ch 8	Mode: Locate
75	156	Bank Left	Host Select
158	158	Mode Rotate Up	Mode Rotate Up — Modes 6–10

NOTES

Functions not listed above do not have Modifier combinations defined, ie they modify to themselves.

Fader, V-Pot and Jogwheel modifier combinations are not user-specifiable via the *Modifier* file.

Modifier + Bypass combinations are reserved for use by Controller modules.

Suggestions for additional default Modifier combinations are welcome.

HOSTS

Steinberg Cubase/Nuendo

LEDs

LED number	LC/MC note number	Pixel offset (H)	Pixel offset (V)	Text off	Text flash	Text on	RGB on	Allow scaling
1	-2	9	0	Cubase	Cubase	Cubase	95 102 110	0
2	50	60	0	flip	flip	flip	140 155 170	1
3	42	90	0	pan	pan	pan	140 155 170	1
4	44	119	0	eq	eq	eq	140 155 170	1
5	45	142	0	dyn	dyn	dyn	140 155 170	1
6	43	173	0	plug	plug	plug	140 155 170	1
7	76	207	0	send	send	send	140 155 170	1
8	80	242	0	inst	inst	inst	140 155 170	1
9	81	274	0	mast	mast	mast	140 155 170	1
10	74	312	0	read	read	read	140 155 170	1
11	75	347	0	write	write	write	140 155 170	1
12	86	388	0	cyc	cyc	cyc	140 155 170	1
13	87	417	0	punch	punch	punch	140 155 170	1
14	95	460	0	rec	rec	rec	140 155 170	1
15	115	488	0	solo	solo	solo	140 155 170	1
16	-1	9999	0	----	----	----	140 155 170	1
17	-1	9999	0	----	----	----	140 155 170	1
18	-1	9999	0	----	----	----	140 155 170	1
19	-1	9999	0	----	----	----	140 155 170	1
20	-1	9999	0	----	----	----	140 155 170	1
21	-1	9999	0	----	----	----	140 155 170	1
22	-1	9999	0	----	----	----	140 155 170	1
23	-1	9999	0	----	----	----	140 155 170	1
24	-1	9999	0	----	----	----	140 155 170	1

NOTES

A note number of -1 prevents an LED from being drawn.

A note number of -2 initially draws an LED using its "on" colour.

The "off" colour is not user-specifiable.

The Pixel offset (V) value is not currently used.

Not all hosts make use of the LC/MC LEDs' flashing state.

Controllers

This section documents the controller modules supplied with LC Xmu. Controller modules are located inside the LC Xmu application package at `/Contents/support/controllers/`. Controller modules are global to all LC Xmu instances.

[Behringer BCR2000](#)

[Doepfer Pocket Dial](#)

[Fostex VM200](#)

[Generic controller](#)

[Generic feedback](#)

[Generic MIDI mixer](#)

[JL Cooper CS-10](#)

[Korg KONTROL](#)

[Mackie Control](#)

[Novation Remote](#)

Behringer BCR2000

The **Behringer BCR2000** module provides support for the BCR2000's endless rotary encoders, encoder LED rings, and button LED feedback. A preset file is provided for the BCR2000 — *Behringer BCR2000 1.0.3 LC Xmu.mid*, in the *Controller Support* folder inside the LC Xmu application folder. Use [Sysex Librarian](#) to upload this preset file to an empty BCR2000 preset.

See [Setting up your controller: Behringer BCR2000](#) for detailed setup instructions.

Rotary encoders

When in “relative” mode (as per the supplied BCR2000 preset) the encoders send a simple increment/decrement message, without a variable increment/decrement amount when the encoder is turned faster (sometimes called the “acceleration” factor). To provide better emulation of the LC/MC's V-Pot feel, LC Xmu emulates this acceleration factor by timing the incoming increment/decrement messages.

V-pot feedback received by LC Xmu from the host application is limited to 11 steps (a real LC/MC has 11 V-pot LEDs), whereas the BCR2000 encoders each have 15 LEDs. By default, LC Xmu uses the central 11 encoder LEDs on the BCR2000 to display V-pot feedback, lighting one LED at a time, and LEDs 1, 2, 14 and 15 are unused. It is possible to use all 15 encoder LEDs for feedback **on the top 8 encoders only** by editing the **encoderledrange** parameter in the controller *Global preferences* file, inside the LC Xmu application package — see below for details.

LC Xmu Modes

The LC Xmu Mode (**select**, **mute**, etc) is global for all controllers in any LC Xmu instance, and will therefore affect the **Select Ch 1–8** buttons on the BCR2000. If the LC Xmu Mode is not **select**, the BCR2000 **Select Ch 1–8** buttons perform other functions **and will be lit accordingly**.

For example, if LC Xmu is in **mute** mode, the **Select Ch 1–8** buttons will mute channels, and the **Select Ch 1–8** button LEDs will display the channel **Mute** button states — this may cause a little confusion until you get used to it, but thereafter it can be pretty useful in conjunction with the BCR2000's encoder groups.

LC Xmu uses the BCR2000 **Modifier** button LED (button 50 by default) to indicate the current Mode status. If the current Mode is **not 1 (select)**, the **Modifier** button LED will flash.

Preferences file

The **Behringer BCR2000** controller module loads a preferences file from inside the LC Xmu application package, at */Contents/support/controllers/Behringer BCR2000/Global preferences*. The preferences file specifies the following options:

encodernumbers xxx xxx

xxx = 0–127, default 102 110 (as per the supplied BCR2000 preset). Specifies the CC numbers that should be interpreted as relative encoders. Must be a continuous range.

encodersensitivity xx yy zz

xx = 0+ (milliseconds), default 0. Sets the time between BCR2000 encoder messages to interpret as the maximum acceleration speed. Increasing this value will cause the emulated v-pot acceleration factor to reach maximum at slower BCR2000 encoder speeds.

yy = 0+ (milliseconds), default 90. Sets the time between BCR2000 encoder messages to begin applying acceleration. BCR2000 encoder messages slower than this value will have no acceleration factor applied. Increasing this value will begin to apply the emulated v-pot acceleration factor at slower BCR2000 encoder speeds.

zz = 1–15, default 8. Maximum emulated v-pot acceleration factor — a value of 8 means that when the BCR2000 encoder is turned as fast as possible, the emulated v-pot moves 8x further than when the BCR2000 encoder is turned slowly.

encodermode x

x = 1 or 2, default 2. Setting this to 1 allows for encoder hardware acceleration. See below.

encodermultiplier x.x

x.x = 1.0+ default 1.0. Speed control for encoders that include hardware acceleration. See <http://www.opuslocus.net/forums/viewtopic.php?t=127>

CONTROLLERS

Behringer BCR2000

feedbackdelay xxx

xxx = 0+ (milliseconds), default 0. Specifies a delay before re-sending various types of feedback to override controller-forced lighting of LEDs.

encoderledrange xx

xx = 11 or 15, default 11. Relative encoders mapped to V-pots may use 11-position (default) or 15-position LED feedback behaviour. Note the host application still only sends 11 steps of feedback to the emulated LC/MC, so when using 15-position feedback, centre, hard left and hard right positions will light 1 LED, all other positions will light 2 LEDs.

Default function maps 1

Host:	Logic	Cubase	Total/Mix	Live	Reason
Encoder 1-32 (groups 1-4)	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8
Encoder 33-40	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8
Encoder 48	Fader Master	Fader Master	Fader Master	Fader Master	Fader Master
Encoder 56	Jogwheel	Jogwheel	PASS THROUGH	Jogwheel	Jogwheel
Encoder 41-47	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Encoder 49-55	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Button 1-8 (grp 1 encoders)	V-select Ch 1-8	V-select Ch 1-8	V-select Ch 1-8	V-select Ch 1-8	F1-F8
Button 9-16 (grp 2 encoders)	Record Ch 1-8	Record Ch 1-8	Record Ch 1-8	Record Ch 1-8	F9-F16
Button 17-24 (grp 3 encoders)	Mute Ch 1-8	Mute Ch 1-8	Mute Ch 1-8	Mute Ch 1-8	Mute Ch 1-8
Button 25-32 (grp 4 encoders)	Solo Ch 1-8	Solo Ch 1-8	Solo Ch 1-8	Solo Ch 1-8	Solo Ch 1-8
Button 33-40	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8
Button 41	Assign:Track	Pan	Mode Rotate Up	Assign:I/O	Assign Button 1
Button 42	Assign:Send	Plug-Ins	Master Mute	Assign:Pan	Assign Button 2
Button 43	Assign:Plugin	FX Send	Master Solo	Assign:Send	Pan
Button 44	Assign:Instrument	EQ	Talkback	Assign:Devices	Plug-ins
Button 45	Cursor Up	Instruments	Mono Main	Returns	EQ
Button 46	Cursor Down	Send Effects	Dim Main	PASS THROUGH	Dyn
Button 47	Cursor Left	Page Down	Row Up	Page Left	Previous Track
Button 48	Cursor Right	Page Up	Row Down	Page Right	Next Track
Button 49	Global View	Master Effects	Unity Gain	PASS THROUGH	Loop On-Off
Button 50	Modifier	Modifier	Modifier	Modifier	Modifier
Button 51	Bank Left	Bank Left	Bank Left	Bank Left	Channel Left
Button 52	Bank Right	Bank Right	Bank Right	Bank Right	Channel Right

NOTES

Encoder/button numbers are as per the BCR hardware/editor. Encoders 41-47 and 49-55 send absolute CC messages, with CC numbers a subset of the General MIDI command set. These are not mapped to LC/MC functions — the intent is that they will be most useful as regular MIDI CCs in the host application.

CONTROLLERS

Behringer BCR2000

Default function maps 2

Host:	Soundtrack	Final Cut
Encoder 1-32 (groups 1-4)	V-pot Ch 1-8	V-pot Ch 1-8
Encoder 33-40	Fader Ch 1-8	Fader Ch 1-8
Encoder 48	Fader Master	Fader Master
Encoder 56	Jogwheel	Jogwheel
Encoder 41-47	PASS THROUGH	PASS THROUGH
Encoder 49-55	PASS THROUGH	PASS THROUGH
Button 1-8 (grp 1 encoders)	F1-F8	F1-F8
Button 9-16 (grp 2 encoders)	Record Ch 1-8	Arrows/Utilities
Button 17-24 (grp 3 encoders)	Mute Ch 1-8	Mute Ch 1-8
Button 25-32 (grp 4 encoders)	Solo Ch 1-8	Solo Ch 1-8
Button 33-40	Select Ch 1-8	Select Ch 1-8
Button 41	Rewind	Rewind
Button 42	Fast Fwd	Fast Fwd
Button 43	Stop	Stop
Button 44	Play	Play
Button 45	Record	Home
Button 46	Cycle	Previous Marker
Button 47	Left	Next Marker
Button 48	Right	End
Button 49	Undo	Undo
Button 50	Modifier	Modifier
Button 51	Bank Left	Bank Left
Button 52	Bank Right	Bank Right

NOTES

Encoder/button numbers are as per the BCR hardware/editor. Encoders 41-47 and 49-55 send absolute CC messages, with CC numbers a subset of the General MIDI command set. These are not mapped to LC/MC functions — the intent is that they will be most useful as regular MIDI CCs in the host application.

Doepfer Pocket Dial

The **Doepfer Pocket Dial** module provides support for the Pocket Dial's true endless rotary encoders, using Pocket Dial presets 85–88. See [Setting up your controller: Doepfer Pocket Dial](#) for detailed setup instructions.

Preferences file

The **Doepfer Pocket Dial** controller module loads a preferences file from inside the LC Xmu application package, at */Contents/support/controllers/Doepfer Pocket Dial/Global preferences*. The preferences file specifies which CC numbers are interpreted as relative encoder messages. Each line specifies one CC number:

dialtype xxx type
xxx = 0–127 (CC number), **type** = off / absolute / relative, default = relative for all CCs.

Default function maps

Host:	All hosts
Encoder 1-8	V-pot Ch 1-8
Encoder 9-16	Fader Ch 1-8

NOTES
The default function mappings are for the Pocket Dial's **preset 86**.

Fostex VM200

The **Fostex VM200** module supports true endless relative behaviour for the VM200's encoders, for jump-free, no-pickup operation. Endless encoder “acceleration” factor is emulated. Motorfader feedback is supported. Most of the VM200's buttons are supported for function mapping, and LED feedback is supported for 19 of the VM200 button LEDs. The VM200 data wheel is supported.

Note the VM200 does not have a “local off” mode — its controls **always** affect the internal digital mixer. LC Xmu uses the VM200's **9–16 ADAT IN** mixer page for LC/MC emulation, so the VM200's **1–8 ANALOG IN** and **17–20 EFF RTN** pages may still be used as a normal digital mixer. **Any ADAT inputs connected to the VM200 will be affected by use with LC Xmu.** ADAT outputs will be unaffected, so you can still route analog inputs to ADAT outputs.

See [Setting up your controller: Fostex VM200](#) for detailed setup instructions.

Feedback

Feedback is sent to the VM200 for motorfaders and 19 LED buttons. Sysex messages are also sent to override the VM200's updating of its own hardware.

Feedback is sent to the MIDI out-port with the same name as the controller MIDI in-port. If the controller is connected via MIDI cable to out/in ports with different names, a device may be added to AudioMIDI Setup and connected to the appropriate interface in/out ports, to provide matching port names to LC Xmu.

LC Xmu sends CC feedback on the same MIDI channel as the last CC event received from the VM200 motorfaders. The CC numbers used are defined in the VM200 User Control Change Table (**TABLE 01**). You may change the CC numbers used by the faders if desired (you will need to remap accordingly in LC Xmu), but **do not change the CC numbers used by the buttons.**

Motorfaders

Feedback is not sent to any control mapped to **Fader Ch 1–8** or **Fader Master** while that control is being manually moved. This prevents motorfader “fighting” by the VM200's non-touch-sensitive motorfaders. Feedback is sent when the control is no longer moving, after a delay corresponding to the controller **Release** setting (in 10 millisecond steps, ie a **Release** value of 50 means feedback will be sent when the control is not moved for 500 milliseconds).

The VM200 motorfaders cannot send CC data while they are receiving CC feedback. This means that it is not possible to overwrite existing fader automation while the faders are moving — the VM200 motorfaders will “fight” your attempted movements. LC Xmu receives no data from the motorfaders, and so cannot “know” to turn off feedback.

It is possible to temporarily disable motorfader feedback by holding down the VM200 **CH VIEW** button. LC Xmu will receive fader data, and the host app will be able to overwrite the existing automation (if the host app supports this). Note that because motorfader feedback is disabled, it will probably be necessary to match the fader position to the current position of the (moving) automation data before new automation is written. This is influenced by LC Xmu’s **Pickup** setting — see [Reference Manual: Preferences: Controllers](#) for more detail.

Alternately, you can engage **Flip** mode (if the host supports it), and use the emulated V-pots to overwrite existing fader automation. See the host’s Mackie Control documentation.

LED buttons

Because the VM200 controls are always connected to the internal digital mixer, it insists on lighting/unlighting its own button LEDs in response to a hardware button press/release. This interferes with the feedback from the host, which should have complete control over the LED state. LC Xmu re-sends the LED button feedback after a delay to compensate, as specified in the controller *Global preferences* file. If you are experiencing problems with erratic button LED updating, try increasing this delay in 100ms steps.

Feedback is sent for 19 LED buttons — the channel **ON** and channel **SOLO** LED buttons, master **ON** and master **SOLO** LED buttons, and the record buss **SOLO** LED button. Note that **ADD AUX** must be **OFF** in the current VM200 scene for the record buss **SOLO** LED to receive feedback.

The following LED buttons are available for LC Xmu function mapping, but also immediately affect the VM200 fader state in hardware, so there may be a brief fader-jump on all faders before LC Xmu resets the fader position (avoid mapping these unless you need them):

AUX1, AUX2, AUX3, AUX4, EFF1 and **EFF2**.

The following LED buttons cannot receive LED feedback — these should be used for emulated LC/MC buttons that do not have LEDs:

AUX1, AUX2, AUX3, AUX4, EFF1, EFF2, ROUTING/PHASE, EQ EDIT (x8), EFF1 and **EFF2**.

The following LED buttons are not available for LC Xmu function mapping:

CHANNEL, CHANNEL/METER, CH VIEW, 1-8 ANALOG IN, 9-16 ADAT IN, 17-20 EFF RTN, and **EQ ON**.

LC Xmu Modes

The LC Xmu Mode (**select**, **mute**, etc) is global for all controllers in any LC Xmu instance, and will affect all buttons mapped to **Select Ch 1–8**. If the LC Xmu Mode is not **select**, the **Select Ch 1–8** buttons will perform other functions **and will be lit accordingly**. For example, if LC Xmu is in **mute** mode, the **Select Ch 1–8** buttons will mute channels, and the **Select Ch 1–8** button LEDs will display the channel **Mute** button states.

Button LEDs mapped to directly select Modes (**Mode:Select**, **Mode:Mute**, etc) are lit whenever that mode is active. Button LEDs mapped to **Mode Rotate Up** or **Mode Rotate Down** will flash whenever the mode is not **Select**.

Note that **ADD AUX** must be **OFF** in the current VM200 scene for the record buss **SOLO** LED button (**Mode Rotate Up** in the default maps) to receive feedback.

Bypasses

When bypassing CCs or notes, all mapped controls (except bypasses) are reset to zero. Bypassed controls do not receive feedback. When un-bypassing CCs or notes, all appropriate controls are returned to the current LC/MC state.

LED buttons mapped to **Bypass CCs** or **Bypass Notes** will be lit accordingly (lit = not bypassed, as per the indicators on the LC Xmu display). LED buttons mapped to **Bypass All** will be lit when both Notes and CCs are not bypassed, flashing when one is bypassed, and unlit when both are bypassed.

Preferences file

The **Fostex VM200** controller module loads a preferences file from inside the LC Xmu application package, at */Contents/support/controllers/Fostex VM200/Global preferences*. The preferences file specifies the following options:

buttonleddelay xxx

xxx = 0+ (milliseconds), default 0 (disabled). Specifies the delay before re-sending button LED feedback to compensate for the VM200 lighting its own LEDs.

CONTROLLERS

Fostex VM200

encodersensitivity xx yy

xx = 0+ (milliseconds), default 90. Sets the time between VM200 encoder messages to begin applying acceleration. VM200 encoder messages slower than this value will have no acceleration factor applied. Increasing this value will begin to apply the emulated v-pot acceleration factor at slower VM200 encoder speeds.

yy = 1–15, default 8. Maximum emulated v-pot acceleration factor — a value of 8 means that when the VM200 encoder is turned as fast as possible, the emulated v-pot moves 8x further than when the VM200 encoder is turned slowly.

Default function maps 1

Host:	Logic	Cubase	TotalMix	Live	Reason
Fader 1-8:	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8
Pan Encoder 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8
Gain encoder 1-4	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Ch On 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8
EQ Edit 1-8	V-select Ch 1-8	V-select Ch 1-8	V-select Ch 1-8	V-select Ch 1-8	PASS THROUGH
Ch Solo 1	Assign:Track	Pan	Select Main	Assign:Pan	Assign Button 1
Ch Solo 2	Assign:Send	FX Send	Monitor Phones 1	Assign:Send	Assign Button 2
Ch Solo 3	Assign:Plugin	Plug-Ins	Monitor Phones 2	Assign:Devices	Pan
Ch Solo 4	Assign: EQ	EQ	Monitor Phones 3	Assign:I/O	Plug-ins
Ch Solo 5	Assign:Instrument	Instruments	PASS THROUGH	Returns	EQ
Ch Solo 6	Stop	Send Effects	Talkback	Stop	Dyn
Ch Solo 7	Play	Master Effects	Mono Main	Play	Stop
Ch Solo 8	Record	Stop	Dim Main	Record	Play
Master On	Global View	Play	Master Mute	Loop	Loop On-Off
Master Solo	Flip	Flip	Master Solo	Flip	Record
Rec Buss Solo	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up
Scene Recall	Bank Left	Bank Left	Bank Left	Bank Left	Channel Left
Scene Store	Bank Right	Bank Right	Bank Right	Bank Right	Channel Right
Data -1	Cursor Left	Page Down	Channel Left	Page Left	Previous Bar
Data +1	Cursor Right	Page Up	Channel Right	Page Right	Next Bar
Exit	Cursor Up	PASS THROUGH	Row Up	PASS THROUGH	Previous Track
Enter	Cursor Down	PASS THROUGH	Row Down	PASS THROUGH	Next Track
Data Wheel	Jogwheel	Jogwheel	PASS THROUGH	Jogwheel	Jogwheel
Setup System	Modifier:Shift	Modifier:Shift	Unity Gain	Modifier:Shift	PASS THROUGH
Setup MIDI	Modifier:Cmd/Alt	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Scene Status	Modifier	Modifier	Modifier	Modifier	Modifier
Routing/Phase	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Pair/Group	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
EQ Recall	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
EQ Store	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
EFF1 Edit	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
EFF2 Edit	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
EFF Recall	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
EFF Store	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH

CONTROLLERS

Fostex VM200

Default function maps 2

Host:	Soundtrack	Final Cut
Fader 1-8:	Fader Ch 1-8	Fader Ch 1-8
Pan Encoder 1-8	V-pot Ch 1-8	V-pot Ch 1-8
Gain encoder 1-4	PASS THROUGH	PASS THROUGH
Ch On 1-8	Select Ch 1-8	Select Ch 1-88
EQ Edit 1-8	PASS THROUGH	F1-F8
Ch Solo 1	PASS THROUGH	PASS THROUGH
Ch Solo 2	PASS THROUGH	PASS THROUGH
Ch Solo 3	PASS THROUGH	PASS THROUGH
Ch Solo 4	Rewind	Rewind
Ch Solo 5	Fast Fwd	Fast Fwd
Ch Solo 6	Stop	Stop
Ch Solo 7	Play	Play
Ch Solo 8	Record	Cancel
Master On	Undo	Undo
Master Solo	Cycle	Enter
Rec Buss Solo	Mode Rotate Up	Mode Rotate Up
Scene Recall	Bank Left	Bank Left
Scene Store	Bank Right	Bank Right
Data -1	Left	Arrow Left
Data +1	Right	Arrow Right
Exit	Up	Arrow Up
Enter	Down	Arrow Down
Data Wheel	Jogwheel	Jogwheel
Setup System	PASS THROUGH	PASS THROUGH
Setup MIDI	PASS THROUGH	PASS THROUGH
Scene Status	Modifier	Modifier
Routing/Phase	PASS THROUGH	PASS THROUGH
Pair/Group	PASS THROUGH	PASS THROUGH
EQ Recall	PASS THROUGH	Home
EQ Store	PASS THROUGH	End
EFF1 Edit	PASS THROUGH	PASS THROUGH
EFF2 Edit	PASS THROUGH	PASS THROUGH
EFF Recall	PASS THROUGH	Previous
EFF Store	PASS THROUGH	Next

Generic controller

The **Generic controller** module may be used for any controller sending standard 7-bit (0–127) note or CC messages, using a **different note or CC number for each control**. Examples include M-Audio, Edirol, Evolution, Kenton and other keyboards and controllers, various Yamaha, Tascam, Korg and Fostex digital mixers, etc. If your specific controller is not listed among the **Controller Type** menu choices, does not offer hardware emulation of one of those choices, and does not support motorfader or button LED feedback, you should try **Generic controller**.

See [Setting up your controller: Generic controller](#) for detailed setup instructions.

Function maps

The default function maps supplied for the **Generic controller** module are mapped for a very simple device: the M-Audio Oxygen 8 default preset — nine absolute CC controls on **CC 7 (Fader Master)** and **CC 10–17 (Fader Ch 1–8)**, and 25 MIDI keys on **notes 48–72** (various functions depending on the selected host).

For a quick start, you may program your controller to use these notes and CCs in hardware, then the default LC Xmu function maps will apply automatically. See the following page for default function maps.

Otherwise, you should remap the functions in LC Xmu to best suit your controller's existing notes and/or CCs. See [Introduction to LC Xmu: Function Mapping](#) for detailed instructions.

CONTROLLERS

Generic controller

Default function maps

Host:	Logic	Cubase	TotalMix	Live	Reason
Knob/Fader 1-8 (CC 10-17) Volume (CC 7)	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master
Notes 48, 50, 52, 53, 55, 57, 59, 60 (white)	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8
Note 49 (black) Note 51 (black)	Assign:Track Assign:Send	Pan FX Send	Master Mute Master Solo	Assign:Pan Assign:Send	Assign:Pan Assign:Dyn
Note 54 (black) Note 56 (black) Note 58 (black)	Assign:Plugin Assign:EQ Assign:Instrument	Plug-Ins EQ Instruments	Talkback Mono Main Dim Main	Assign:Devices Assign:I/O Returns	Plug-ins EQ Assign Button 1
Note 61 (black) Note 63 (black)	Modifier:Shift Global View	Send Effects Master Effects	Unity Gain Select Main	Modifier:Shift PASS THROUGH	Assign Button 2 PASS THROUGH
Note 66 (black) Note 68 (black) Note 70 (black)	Flip Modifier Mode Rotate Up	Flip Modifier Mode Rotate Up	PASS THROUGH Modifier Mode Rotate Up	Flip Modifier Mode Rotate Up	Loop On-Off Modifier Mode Rotate Up
Note 62 (white) Note 64 (white) Note 65 (white) Note 67 (white) Note 69 (white) Note 71 (white) Note 72 (white)	Bank Left Bank Right Cursor Left Cursor Right Cursor Up Cursor Down Bypass Notes	Bank Left Bank Right Page Down Page Up Play Stop Bypass Notes	Bank Left Bank Right Row Up Row Down PASS THROUGH PASS THROUGH Bypass Notes	Bank Left Bank Right Page Left Page Right Play Stop Bypass Notes	Channel Left Channel Right Previous Track Next Track Play Stop Bypass Notes

Host:	Soundtrack	Final Cut
Knob/Fader 1-8 (CC 10-17) Volume (CC 7)	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master
Notes 48, 50, 52, 53, 55, 57, 59, 60 (white)	Select Ch 1-8	Select Ch 1-8
Note 49 (black) Note 51 (black)	Rewind Fast Fwd	Rewind Fast Fwd
Note 54 (black) Note 56 (black) Note 58 (black)	Stop Play Record	Stop Play Cancel
Note 61 (black) Note 63 (black)	Cycle Save	Enter Save
Note 66 (black) Note 68 (black) Note 70 (black)	Undo Modifier Mode Rotate Up	Undo Modifier Mode Rotate Up
Note 62 (white) Note 64 (white) Note 65 (white) Note 67 (white) Note 69 (white) Note 71 (white) Note 72 (white)	Bank Left Bank Right Left Right Up Down Bypass Notes	Bank Left Bank Right Home Previous Marker Next Marker End Bypass Notes

Generic feedback

The **Generic feedback** module may be used for any feedback-capable controller sending standard 7-bit MIDI note or CC messages, using a **different note or CC number for each control**. Examples include various Yamaha, Tascam, Behringer and Fostex digital mixers, the Behringer BCF2000, etc. If your specific controller is not listed among the **Controller Type** menu choices, does not offer hardware emulation of one of those choices, and can make use of feedback for motorfaders and/or LEDs, you should try **Generic feedback**.

7-bit (0-127) note or CC messages are required. 14-bit two-byte MSB/LSB CC messages, NPRNs, pitchbend or sysex messages are not supported. Relative increment/decrement CC messages (as sent by true endless rotary encoders) are not currently supported.

See [Setting up your controller: Generic feedback](#) for detailed setup instructions.

Feedback

CC and note feedback is sent as 7-bit values (0–127), to the same CC or note number as the input message. Feedback is enabled for any control not mapped to **PASS THROUGH** or **OFF**.

Feedback is sent to the MIDI out-port with the same name as the controller MIDI in-port. If the controller is connected via MIDI cable to out/in ports with different names, a device may be added to AudioMIDI Setup and connected to the appropriate interface in/out ports, to provide matching port names to LC Xmu.

Feedback is not channel-sensitive — LC Xmu expects the controller to be sending/receiving on a single MIDI channel. LC Xmu will send feedback on the same channel as the last MIDI event received from the controller.

Motorfaders

By default, feedback is not sent to any control mapped to **Fader Ch 1–8** while that control is being manually moved. This can help prevent unwanted motorfader “fighting”. Feedback will be sent when the control is no longer moving, after a delay corresponding to the controller **Release** setting (in 10 millisecond steps, ie a **Release** value of 50 means feedback will be sent when the control is not moved for 500 milliseconds). Feedback while the control is manually moved can be enabled if desired by editing the controller *Global preferences* file.

LED buttons

Some controllers may insist on lighting/unlighting their own button LEDs in response to a hardware button press/release. This will interfere with the feedback from the host, which should have complete control over the LED state. LC Xmu can optionally re-send the button feedback after a delay to compensate, as specified in the controller *Global preferences* file. If you are experiencing problems with erratic button LED updating, try increasing this delay in 100ms steps.

Rotary LED-rings

Feedback to generic rotary LED-rings when mapped to **V-pot Ch 1-8** is possible, with some limitations. Due to potential differences between the several LC/MC V-pot LED-ring formats (single dot, boost/cut, wrap, spread, off, centre-dot, etc) and various generic encoder-ring formats, feedback may not display as expected for all situations or hosts on some hardware.

Consequently, **rotary LED-ring feedback is not enabled by default**. Feedback to rotary LED-rings may be enabled by editing the controller *Global preferences* file.

Some controllers may insist on lighting/unlighting their own rotary LED-rings in response to a hardware button press/release. This will interfere with the feedback from the host, which should have complete control over the rotary LED-ring state. LC Xmu can optionally re-send the rotary LED-ring feedback after a delay to compensate, as specified in the controller *Global preferences* file. If you are experiencing problems with erratic rotary LED-ring updating, try increasing this delay in 100ms steps.

Rotary LED-ring feedback is sent for CCs only, values 0-127, in 11 steps (the LC/MC V-pot LED-rings have 11 LEDs, so that's all the host sends to LC Xmu).

LC Xmu Modes

The LC Xmu Mode (**select**, **mute**, etc) is global for all controllers in any LC Xmu instance, and will affect all buttons mapped to **Select Ch 1-8**. If the LC Xmu Mode is not **select**, the **Select Ch 1-8** buttons will perform other functions **and will be lit accordingly**. For example, if LC Xmu is in **mute** mode, the **Select Ch 1-8** buttons will mute channels, and the **Select Ch 1-8** button LEDs will display the channel **Mute** button states.

Button LEDs mapped to directly select Modes (**Mode:Select**, **Mode:Mute**, etc) are lit whenever that mode is active. Button LEDs mapped to **Mode Rotate Up** or **Mode Rotate Down** will flash whenever the mode is not **Select**.

Bypasses

When bypassing CCs or notes, all mapped controls (except bypasses) are reset to zero. Bypassed controls do not receive feedback. When un-bypassing CCs or notes, all appropriate controls are returned to the current LC/MC state.

LED buttons mapped to **Bypass CCs** or **Bypass Notes** will be lit accordingly (lit = not bypassed, as per the indicators on the LC Xmu display). LED buttons mapped to **Bypass All** will be lit when both Notes and CCs are not bypassed, flashing when one is bypassed, and unlit when both are bypassed.

Preferences file

The **Generic feedback** controller module loads a preferences file from inside the LC Xmu application package, at */Contents/support/controllers/Generic feedback/Global preferences*. The preferences file specifies the following options:

touchfeedback x

x = 0 / 1 (disabled/enabled), default = 0. Specifies whether feedback is sent to any control mapped to **Fader Ch 1–8** while that control is being manually moved.

buttonleddelay xxx

xxx = 0+ (milliseconds), default 0 (disabled). Specifies the delay before re-sending button LED feedback to compensate for controllers that light their own LEDs.

vpotledenable x

x = 0 / 1 (disabled/enabled), default = 0. Specifies whether LED-ring feedback is sent to any rotary encoder mapped to **V-Pot Ch 1–8**.

vpotleddelay xxx

xxx = 0+ (milliseconds), default 0 (disabled). Specifies the delay before re-sending rotary LED-ring feedback (if enabled) to compensate for controllers that light their own rotary LED-rings.

CONTROLLERS

Generic feedback

Function maps

The default function maps supplied for the **Generic feedback** module are identical to the **Generic controller** function maps — nine absolute CC controls on **CC 7** (Fader Master) and **CC 10–17** (Fader 1-8), and 25 MIDI notes on **notes 48–72** (various functions depending on the selected host).

For a quick start, you may program your controller to use these notes and CCs in hardware, then the default LC Xmu function maps will apply automatically. See the following page for default function maps.

Otherwise, you should remap the functions in LC Xmu to best suit your controller's existing notes and/or CCs. See [Introduction to LC Xmu: Function Mapping](#) for detailed instructions.

Default function maps 1

Host:	Logic	Cubase	TotalMix	Live	Reason
Knob/Fader 1-8 (CC 10-17) Volume (CC 7)	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master
Notes 48, 50, 52, 53, 55, 57, 59, 60 (white)	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8
Note 49 (black) Note 51 (black)	Assign:Track Assign:Send	Pan FX Send	Master Mute Master Solo	Assign:Pan Assign:Send	Assign:Pan Assign:Dyn
Note 54 (black) Note 56 (black) Note 58 (black)	Assign:Plugin Assign:EQ Assign:Instrument	Plug-Ins EQ Instruments	Talkback Mono Main Dim Main	Assign:Devices Assign:I/O Returns	Plug-ins EQ Assign Button 1
Note 61 (black) Note 63 (black)	Modifier:Shift Global View	Send Effects Master Effects	Unity Gain Select Main	Modifier:Shift PASS THROUGH	Assign Button 2 PASS THROUGH
Note 66 (black) Note 68 (black) Note 70 (black)	Flip Modifier Mode Rotate Up	Flip Modifier Mode Rotate Up	PASS THROUGH Modifier Mode Rotate Up	Flip Modifier Mode Rotate Up	Loop On-Off Modifier Mode Rotate Up
Note 62 (white) Note 64 (white) Note 65 (white) Note 67 (white) Note 69 (white) Note 71 (white) Note 72 (white)	Bank Left Bank Right Cursor Left Cursor Right Cursor Up Cursor Down Bypass Notes	Bank Left Bank Right Page Down Page Up Play Stop Bypass Notes	Bank Left Bank Right Row Up Row Down PASS THROUGH PASS THROUGH Bypass Notes	Bank Left Bank Right Page Left Page Right Play Stop Bypass Notes	Channel Left Channel Right Previous Track Next Track Play Stop Bypass Notes

CONTROLLERS

Generic feedback

Default function maps 2

Host:	Soundtrack	Final Cut
Knob/Fader 1-8 (CC 10-17) Volume (CC 7)	Fader Ch 1-8 Fader Master	Fader Ch 1-8 Fader Master
Notes 48, 50, 52, 53, 55, 57, 59, 60 (white)	Select Ch 1-8	Select Ch 1-8
Note 49 (black) Note 51 (black)	Rewind Fast Fwd	Rewind Fast Fwd
Note 54 (black) Note 56 (black) Note 58 (black)	Stop Play Record	Stop Play Cancel
Note 61 (black) Note 63 (black)	Cycle Save	Enter Save
Note 66 (black) Note 68 (black) Note 70 (black)	Undo Modifier Mode Rotate Up	Undo Modifier Mode Rotate Up
Note 62 (white) Note 64 (white) Note 65 (white) Note 67 (white) Note 69 (white) Note 71 (white) Note 72 (white)	Bank Left Bank Right Left Right Up Down Bypass Notes	Bank Left Bank Right Home Previous Marker Next Marker End Bypass Notes

Generic MIDI mixer

The **Generic MIDI mixer** module may be used for any controller sending multiple channels of fixed CC messages (for example eight channels of CC7/CC10 volume/pan on MIDI channels 1-8), where you cannot reassign the controller to send a different CC number for each physical control. Examples include the JL Cooper Faderbaby.

See [Setting up your controller: Generic MIDI mixer](#) for detailed setup instructions.

Bypass and passthrough

When a control is set to **PASS THROUGH**, or LC Xmu is in **CC Bypass** mode, the passed-through CCs match the hardware CC and channel numbers **before input remapping**, not the remapped CC numbers displayed by LC Xmu. This allows the controller to continue to function as a multichannel MIDI mixer when bypassed, for use with multitimbral synthesizers, multichannel host mixers, etc.

For example, if a control sends CC7 on channel 8, that will be remapped to CC23 (by default) for use in LC Xmu. If this is mapped to **PASS THROUGH**, or LC Xmu is in **CC Bypass** mode, LC Xmu will continue to display *Control 23* as input, but the passed-through event will be CC7 on channel 8, not CC23.

Preferences file

The **Generic MIDI mixer** controller module loads a preferences file from inside the LC Xmu application package, at */Contents/support/controllers/Generic MIDI mixer/Global preferences*. The preferences file specifies how the fixed 16 channel CC numbers are remapped to individual CC numbers. Each line remaps a single CC:

map cc ch cc

cc = 0–127, **ch** = 1–16. A line specifying **map 7 12 27** remaps CC7 on channel 12 to CC27.

Function maps

The default function maps supplied for the **Generic MIDI mixer** include note mappings as supplied for the **Generic controller** module, to allow the possibility of hardware merging with a keyboard, since many generic MIDI mixers do not include sufficient buttons for effective LC/MC emulation. See the following page for default function maps.

CONTROLLERS

Generic MIDI mixer

Default function maps

Host:	Logic	Cubase	TotalMix	Live	Reason
Volume Ch 1–8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8
Volume Ch 9	Fader Master	Fader Master	Fader Master	Fader Master	Fader Master
Pan Ch 1–8	V-Pot Ch 1-8	V-Pot Ch 1-8	V-Pot Ch 1-8	V-Pot Ch 1-8	V-Pot Ch 1-8
Other volume/pan	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Notes 48, 50, 52, 53, 55, 57, 59, 60 (white)	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8
Note 49 (black)	Assign:Track	Pan	Master Mute	Assign:Pan	Assign:Pan
Note 51 (black)	Assign:Send	FX Send	Master Solo	Assign:Send	Assign:Dyn
Note 54 (black)	Assign:Plugin	Plug-Ins	Talkback	Assign:Devices	Plug-ins
Note 56 (black)	Assign:EQ	EQ	Mono Main	Assign:I/O	EQ
Note 58 (black)	Assign:Instrument	Instruments	Dim Main	Returns	Assign Button 1
Note 61 (black)	Modifier:Shift	Send Effects	Unity Gain	Modifier:Shift	Assign Button 2
Note 63 (black)	Global View	Master Effects	Select Main	PASS THROUGH	PASS THROUGH
Note 66 (black)	Flip	Flip	PASS THROUGH	Flip	Loop On-Off
Note 68 (black)	Modifier	Modifier	Modifier	Modifier	Modifier
Note 70 (black)	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up
Note 62 (white)	Bank Left	Bank Left	Bank Left	Bank Left	Channel Left
Note 64 (white)	Bank Right	Bank Right	Bank Right	Bank Right	Channel Right
Note 65 (white)	Cursor Left	Page Down	Row Up	Page Left	Previous Track
Note 67 (white)	Cursor Right	Page Up	Row Down	Page Right	Next Track
Note 69 (white)	Cursor Up	Play	PASS THROUGH	Play	Play
Note 71 (white)	Cursor Down	Stop	PASS THROUGH	Stop	Stop
Note 72 (white)	Bypass Notes	Bypass Notes	Bypass Notes	Bypass Notes	Bypass Notes

Host:	Soundtrack	Final Cut
Volume Ch 1–8	Fader Ch 1-8	Fader Ch 1-8
Volume Ch 9	Fader Master	Fader Master
Pan Ch 1–8	V-Pot Ch 1-8	V-Pot Ch 1-8
Other volume/pan	PASS THROUGH	PASS THROUGH
Notes 48, 50, 52, 53, 55, 57, 59, 60 (white)	Select Ch 1-8	Select Ch 1-8
Note 49 (black)	Rewind	Rewind
Note 51 (black)	Fast Fwd	Fast Fwd
Note 54 (black)	Stop	Stop
Note 56 (black)	Play	Play
Note 58 (black)	Record	Cancel
Note 61 (black)	Cycle	Enter
Note 63 (black)	Save	Save
Note 66 (black)	Undo	Undo
Note 68 (black)	Modifier	Modifier
Note 70 (black)	Mode Rotate Up	Mode Rotate Up
Note 62 (white)	Bank Left	Bank Left
Note 64 (white)	Bank Right	Bank Right
Note 65 (white)	Left	Home
Note 67 (white)	Right	Previous Marker
Note 69 (white)	Up	Next Marker
Note 71 (white)	Down	End
Note 72 (white)	Bypass Notes	Bypass Notes

JL Cooper CS-10

The **JL Cooper CS-10** module provides support for the CS-10 endless wheel encoder, and for feedback to the various CS-10 LEDs.

See [Setting up your controller: JL Cooper CS-10](#) for detailed setup instructions.

Mode and channel LEDs

The CS-10 mode LEDs and channel mute button LEDs function as follows:

When LC Xmu is in Mode 1 (generally **select**), the CS-10 channel buttons correspond to the LC/MC's channel select buttons. The CS-10 select mode LED will be lit. Selecting a channel will light the corresponding channel button LED on the CS-10.

When LC Xmu is in Mode 2 (generally **mute**), the CS-10 channel buttons correspond to the LC/MC's channel mute buttons. The CS-10 mute mode LED will be lit. Muting a channel will light the corresponding channel button LED on the CS-10.

When LC Xmu is in Mode 3 (generally **solo**), the CS-10 channel buttons correspond to the LC/MC's channel solo buttons. The CS-10 solo mode LED will be lit. Soloing a channel will light the corresponding channel button LED on the CS-10.

When LC Xmu is in Mode 4 (generally **record**), the CS-10 channel buttons correspond to the LC/MC's channel record buttons. All four CS-10 mode LEDs will be lit. Record-enabling a channel will light the corresponding channel button LED on the CS-10.

When LC Xmu is in Mode 1 (generally **vselect**), the CS-10 channel buttons correspond to the LC/MC's channel vselect buttons (vpot-push). The CS-10 locate mode LED will be lit. Selecting a channel will light the corresponding channel button LED on the CS-10.

When LC Xmu is in any of Modes 6–10 (which vary considerably for each host), the CS-10 channel button functions depend on the current host/mode. For Modes 6–9, one CS-10 mode LED will be lit, the others will flash. For Mode 10, all CS-10 mode LEDs will flash. Selecting a channel will light the corresponding channel button LED on the CS-10.

Other LEDs

The 2-character Assign LED display corresponds, as near as possible, to the LC/MC red Assign display, if the host application makes use of this.

The other CS-10 LEDs correspond to various LC/MC LEDs, and are user-specifiable on a per-host basis by editing the appropriate configuration text file in the LC Xmu application package, at */Contents/support/controllers/JL Cooper CS-10/<hostname> LEDs*. Each line specifies one LED mapping:

xx, yy;

xx = button note number, as sent by LC Xmu (**not** the function number from the *Overlay* file)

yy = CS-10 sysex LED number, as specified in the CS-10 manual. Default LED mappings:

Host	Logic	Cubase	TotalMix	Live	Reason
Null Up	Flip	Flip	Mono Main	Flip	Loop
Null Down	Global View	--	Dim Main	Returns	--
Wheel Left	--	--	Master Mute	Send	--
Wheel Right	Scrub	--	Master Solo	Device	--
Record	Record	Record	Talkback	Record	Record
Assign 10s Dot	--	--	--	--	--
Assign 1s Dot	--	--	--	--	--

Host	Soundtrack	Final Cut
Null Up	--	--
Null Down	--	--
Wheel Left	--	--
Wheel Right	--	--
Record	--	--
Assign 10s Dot	--	--
Assign 1s Dot	--	--

NOTES

The Assign 1s Dot should NOT be assigned for Logic, which uses it for the LC/MC Assign display dot.

Preferences file

The **JL Cooper CS-10** controller module loads a preferences file from inside the LC Xmu application package, at */Contents/support/controllers/JL Cooper CS-10/Global preferences*. The preferences file allows remapping of the CS-10 input CC numbers, and adjustment of the jogwheel speed:

ccmap cc cc

cc = 0–127. A line specifying **ccmap 7 12** remaps CC7 input to CC12.

wheeladjust xx

xx = 0+, default 19. Experiment...

CONTROLLERS

JL Cooper CS-10

Default function maps 1

Host:	Logic	Cubase	TotalMix	Live	Reason
Fader 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8
Mute 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8
Mode	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up
Shift	Modifier:Shift	Shift	Unity Gain	Modifier:Shift	Loop On-Off
F1	Modifier	Modifier	Modifier	Modifier	Modifier
F2	Assign:Track	Pan	Monitor Phones 1	Assign:I/O	Assign Button 1
F3	Assign:Pan	Plug-ins	Monitor Phones 2	Assign:Pan	Assign Button 2
F4	Assign:Send	EQ	Select Main	Assign:Send	Pan
F5	Flip	Flip	Master Mute	Flip	Go To Left Locator
F6	Global View	FX Send	Master Solo	Returns	Go To Right Locator
F7	Assign:Plugin	Send Effects	Talkback	Page Left	Plug-ins
F8	Assign:EQ	Instruments	Dim Main	Page Right	EQ
F9	Assign:Inst	Master Effects	Mono Main	Assign:Devices	Dyn
Rewind	Rewind	Rewind	Preset 1	Rewind	Rewind
FF	FF	FF	Preset 2	FF	FF
Stop	Stop	Stop	Preset 3	Stop	Stop
Play	Play	Play	Preset 4	Play	Play
Record	Record	Record	Preset 5	Record	Record
Wheel	Jogwheel	Jogwheel	Fader Master	Jogwheel	Jogwheel
Wheel Button Left	Bank Left	Bank Left	Bank Left	Bank Left	Channel Left
Wheel Button Right	Bank Right	Bank Right	Bank Right	Bank Right	Channel Right
Cursor Up	Cursor Up	Page Up	Row Up	Arrow up	Previous Track
Cursor Down	Cursor Down	Page Down	Row Down	Arrow Down	Next Track
Cursor Left	Cursor Left	PASS THROUGH	Channel Left	Arrow Left	Previous Bar
Cursor Right	Cursor Right	Bypass CCs	Channel Right	Arrow Right	Next Bar
Footswitch	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Knobs 1-6	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH

NOTES

The six knobs may be assigned to V-Pots, with some limitations — see [Introduction to LC Xmu: Mapping to V-Pots/Jogwheel](#).
By default, they are assigned to "PASS THROUGH" so you can use them as normal CC controls in your host application.

CONTROLLERS

JL Cooper CS-10

Default function maps 2

Host:	Soundtrack	Final Cut
Fader 1-8	Fader Ch 1-8	Fader Ch 1-8
Mute 1-8	Select Ch 1-8	Select Ch 1-8
Mode	Mode Rotate Up	Mode Rotate Up
Shift	Undo	Shift
F1	Modifier	Modifier
F2	F2	Cancel
F3	F3	Enter
F4	F4	Save
F5	F5	Undo
F6	F6	Home
F7	F7	Previous Marker
F8	F8	Next Marker
F9	Cycle	End
Rewind	Rewind	Rewind
FF	FF	FF
Stop	Stop	Stop
Play	Play	Play
Record	Record	PASS THROUGH
Wheel	Jogwheel	Jogwheel
Wheel Button Left	Bank Left	Bank Left
Wheel Button Right	Bank Right	Bank Right
Cursor Up	Up	Arrow Up
Cursor Down	Down	Arrow Down
Cursor Left	Left	Arrow Left
Cursor Right	Right	Arrow Right
Footswitch	PASS THROUGH	PASS THROUGH
Knobs 1-6	PASS THROUGH	PASS THROUGH

NOTES

The six knobs may be assigned to V-Pots, with some limitations — see [Introduction to LC Xmu: Mapping to V-Pots/Jogwheel](#). By default, they are assigned to "PASS THROUGH" so you can use them as normal CC controls in your host application.

Korg KONTROL

The **Korg KONTROL** module supports “Native Korg Mode” for both the Korg microKONTROL and the Korg KONTROL49.

See [Setting up your controller: Korg KONTROL](#) for detailed setup instructions.

LCD displays

LC Xmu provides extensive realtime parameter and state information on the KONTROL's nine 8-character LCD displays.

MAIN LCD

The main LCD display shows the following information using the available 8 characters:

- Current LC Xmu Mode using a single character, as defined by the single-character field in the LC Xmu host-specific *Modes* file, typically *, **M**, **S**, **R**, **V** for **select**, **mute**, **solo**, **record** and **vselect** Modes, other characters as appropriate. The display is orange when the Mode is **select**, red when the Mode is not **select**. The full Mode name is shown briefly, using the whole display, when switching mode.
- Note/CC bypass state as -/N and -/C for bypassed/active. The full state is shown briefly, using the whole display, when bypassing or un-bypassing Notes or CCs.
- Assignment display as 2 characters plus dot, if the host uses it.
- The host name is shown briefly, using the whole display, when switching host.

A typical main LCD display may look like this: [* - C tr.]

Meaning (in Logic) **select** mode, notes bypassed, CCs active, Selected-track-channelstrip

CHANNEL LCDS

Distance to soft takeover sync for faders is indicated with left/right (for decrease/increase) arrows and a numeric value on a **red** background. The KONTROL faders don't skip many values — LC Xmu's **Pickup** value can therefore be set quite low (3 or 4) to minimize the slight jumps when fader sync occurs.

CONTROLLERS

Korg KONTROL

The LC/MC uses a 2-line LCD display, whereas the KONTROL provides only a single line. The KONTROL module provides manual and automatic line-switching to display the most relevant information when possible:

Pressing and releasing **Modifier** manually switches all channel LCD displays between the top and bottom lines of the LC/MC display.

Individual channel LCD displays are automatically switched to the top or bottom line as needed to show currently-changing values. After the display stops changing, the individual channel LCD display is returned to its previous state.

Channel LCD displays may also be automatically switched when pressing/holding/releasing specific buttons, when specific LEDs are lit/unlit, or according to Assign Display changes ("tr.", "SE", etc), to show the most useful information for that action. It is possible to change the order, timing, and colour of the automatic display-switching for each individual action by editing a host-specific text file in the LC Xmu application package at */Contents/support/controllers/Korg KONTROL/<hostname> LCD*.

The *LCD* file uses 5 fields per line: **trigger-event, first-switch, second-switch, colour, delay**. The following are example lines from the *Logic LCD* file:

50off none none default default

When LED note 50 (Flip) with value 0 (off) is *received* from the host, do nothing. This line is present as a format-placeholder for LED messages.

46press top none default default

When emulated LC/MC button 46 (bank left) is *pressed*, switch the display to the top line immediately.

46release restore none default default

When emulated LC/MC button 46 (bank left) is *released*, immediately restore the display to the line it was displaying before the button was pressed.

tr. top bottom default default

When the Assign Display shows "tr.", immediately switch to the top line, then switch to the bottom line after the default delay. The default delay is defined in the controller *Global preferences* file.

M_ bottom top default 2000

When the Assign Display shows "M_", immediately switch to the bottom line, then switch to the top line after a delay of 2000 milliseconds.

The default *LCD* files supplied do not make any use of backlight colour-switching — the 4th field is always **default**. If you wish to experiment with this, the available colour names to use in the fourth field are **default**, **orange**, **red**, **green**, and **off**.

LEDs

Button LEDs and pad LEDs on the KONTROL will be lit or unlit according to the state of the matching LED on the emulated LC/MC (the host must also support the LED). For example, if pad 1 is mapped to **Select Ch 1**, and the emulated LC/MC's Select LED for channel 1 is lit, the KONTROL pad 1 LED will be lit.

Note that pads or buttons mapped to **Select Ch 1–8** will also be affected by the current LC Xmu Mode. For example, while LC Xmu is in **mute** Mode, a pad mapped to **Select Ch 1** will mute channel 1, and will be lit if the emulated LC/MC channel 1 Mute LED is lit.

The KONTROL Tempo LED may be mapped to any emulated LC/MC LED, as specified in the controller *Global preferences* file. The Tempo LED is mapped to the LC/MC Rude Solo LED by default.

Bypasses

Modifier + Bypass CCs

Switches the pads to send notes and turns all pad LEDs off. The default notes sent are a General Midi drum set, as per the Akai MPC preset 1 pads. Note however that LC Xmu does not distinguish between keyboard and pad notes — if any of the equivalent notes on the keyboard are assigned to LC Xmu functions, the pad notes will trigger those functions too. The pad notes do not transpose with the keyboard.

Bypass CCs

Pads are switched to send notes as above. The **scene**, **message**, **setting** and **exit** button LEDs flash. The LCD displays are switched to display the CC number and values sent by the faders and rotary encoders, with faders in green, rotary encoders in red. Rotary encoders are displayed initially, so you can see what their current values are. The encoders will send regular absolute 0–127 values, not relative increment/decrement messages.

MIDI channel, program and bank changes

When CCs are bypassed, the **scene**, **message**, **setting** and **exit** buttons can be used to change the KONTROL MIDI channel, send a program-change message, send a Bank-MSB message, or send a Bank-LSB message respectively. Hold the button down, and use the lit

CONTROLLERS

Korg KONTROL

pads numbered 0–9 (the numbers at the left of the pads) to enter the channel, bank or program number. When you release the button, the channel will be changed, or the bank/program message sent. The main LCD display provides feedback while the **scene**, **message**, **setting** or **exit** button is held down.

Modifier + lowest 3 notes

(C + C# + D, when transposed down 3 times)

This bypasses Notes and CCs, then takes the KONTROL out of Native Korg Mode, back to whatever KONTROL scene was last active. You can change scenes and generally use the KONTROL as if LC Xmu was not running. All input from the KONTROL will be passed through via the LC Xmu passthru port. See the [Introduction to LC Xmu: Bypass and passthrough](#) section for more information about the passthrough port.

To return the KONTROL to LC Xmu native mode operation, press the lowest 3 notes on the keyboard simultaneously (C + C# + D, transposed down 3 times) — the LC Xmu KONTROL module will reload, CCs and Notes will be un-bypassed, and the KONTROL will be returned to Native Korg Mode.

Preferences file

The **Korg KONTROL** controller module loads a preferences file from inside the LC Xmu application package, at */Contents/support/controllers/Korg KONTROL/Global preferences*. The preferences file defines the input CC and Note numbers for each control in Native Korg Mode, and various other options as below:

fader xx cc

xx = 0–7, **cc** = 0–127, defaults 7,11,71,74,81,73,80,72. Specifies the input CC number for each fader.

encoder xx cc

xx = 0–8 (main = 8), **cc** = 0–127, defaults 10,8,91,92,93,94,95,5,2. Specifies the input CC number for each rotary encoder.

padcc xx cc

xx = 0–15, **cc** = 0–127, defaults 102–117. Specifies the input CC number for each pad when not bypassed.

padnote xx nn

xx = 0–15, **nn** = 0–127, defaults 49,55,51,53,48,47,45,43,40,38,46,44,37,36,42,82. Specifies the input note number for each pad when bypassed.

CONTROLLERS

Korg KONTROL

button xx cc

xx = 2–9, **cc** = 0–127, defaults 24–31. Specifies the input CC number for each button/switch.

pedal cc

cc = 0–127, default 64. Specifies the input CC number for the pedal switch.

modwheel cc

cc = 0–127, default 1. Specifies the input CC number for the KONTROL49 modwheel.

k49-joystick Y cc

cc = 0–127, default 17. Specifies the input CC number for the KONTROL49 joystick y-axis.

k49-joystick X cc

cc = 0–127, default 16. Specifies the input CC number for the KONTROL49 joystick x-axis.

mk-joystick up cc

cc = 0–127, default 1. Specifies the input CC number for the microKONTROL joystick-up.

mk-joystick down cc

cc = 0–127, default 31. Specifies the input CC number for the microKONTROL joystick-down.

mk-joystick upmin xxx

xx = 0–127, default 0. Specifies the minimum value to accept as input for the microKONTROL joystick-up. Can be set higher to prevent accidental joystick-up messages when using the joystick x-axis (pitchbend).

mk-joystick downmin xxx

xxx = 0–127, default 0. Specifies the minimum value to accept as input for the microKONTROL joystick-down. Can be set higher to prevent accidental joystick-down messages when using the joystick x-axis (pitchbend).

lcdswitchdelay xxx

xxx = 0+ (milliseconds), default 999. Sets the default delay for the automatic LCD line-switching, as discussed in the *LCD displays* section earlier.

recordLED nn

nn = 0–127, default 115 (Rude Solo). Specifies which LC/MC LED is mapped to the KONTROL's Tempo LED. Values are LC/MC note numbers, **not** LC Xmu function numbers.

CONTROLLERS

Korg KONTROL

Default function maps 1

Host:	Logic	Cubase	TotalMix	Live	Reason
Fader 1-8:	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8
Encoder 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8
Main Encoder	Fader Master	Fader Master	Fader Master	Fader Master	Fader Master
Pad 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8
Pad 9	Assign:Track	Page Up	Monitor Phones 1	Assign:I/O	Assign Button 1
Pad 10	Assign:Send	Pan	Monitor Phones 2	Assign:Send	Pan
Pad 11	Assign:Plugin	Plug-Ins	Select Main	Returns	Plug-ins
Pad 12	Cursor Up	Send Effects	Row Up	PASS THROUGH	Previous Track
Pad 13	Assign:Instrument	Page Down	Master Mute	Assign:Pan	Assign Button 2
Pad 14	Cursor Left	EQ	Master Solo	Assign:Devices	EQ
Pad 15	Cursor Right	FX Send	Talkback	Page Left	Dyn
Pad 16	Cursor Down	Instruments	Row Down	Page Right	Next Track
Setting	Global View	Master Effects	Mono Main	PASS THROUGH	Play
Message	Flip	Flip	Dim Main	Flip	Stop
Scene	Modifier:Shift	Shift	Unity Gain	Modifier:Shift	Loop On-Off
Exit	Modifier	Modifier	Modifier	Modifier	Modifier
Hex Lock	Bank Left	Bank Left	Bank Left	Bank Left	Channel Left
Enter	Bank Right	Bank Right	Bank Right	Bank Right	Channel Right
Octave down/up Keyboard	These always transpose the keyboard and are not accessible or assignable in LC Xmu. All notes are passed through by default (assignable).				
Pedal	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
KONTROL49 ONLY					
Joystick X (CC16)	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Joystick Y (CC17)	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Mod wheel (CC1)	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Switch 1	Bypass CCs	Bypass CCs	Bypass CCs	Bypass CCs	Bypass CCs
Switch 2	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up
Pitch wheel	Pitchbend (always passed through, not assignable)				
MICROKONTROL ONLY					
Joystick X	Pitchbend (always passed through, not assignable)				
Joystick Up (CC1)	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Joystick Down	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up
Joystick Switch	Bypass CCs	Bypass CCs	Bypass CCs	Bypass CCs	Bypass CCs

The microKONTROL joystick Y-axis up/down may be separately modified to only send values above a certain threshold, in order to prevent triggering assigned functions when pitchbend is used. This is accomplished by editing the appropriate line in the *Global preferences* file. The default is to allow all +/- Y values.

CONTROLLERS

Korg KONTROL

Default function maps 2

Host:	Soundtrack	Final Cut
Fader 1-8:	Fader Ch 1-8	Fader Ch 1-8
Encoder 1-8	V-pot Ch 1-8	V-pot Ch 1-8
Main Encoder	Jogwheel	Fader Master
Pad 1-8	Select Ch 1-8	Select Ch 1-8
Pad 9	Stop	Stop
Pad 10	Rewind	Rewind
Pad 11	Fast Fwd	Fast Fwd
Pad 12	Up	Arrow Up
Pad 13	Play	Play
Pad 14	Left	Arrow Left
Pad 15	Right	Arrow Right
Pad 16	Down	Arrow Down
Setting	Record	Previous Marker
Message	Cycle	Next Marker
Scene	Undo	Undo
Exit	Modifier	Modifier
Hex Lock	Bank Left	Bank Left
Enter	Bank Right	Bank Right
Octave down/up Keyboard	These always transpose the keyboard and are not accessible or assignable in LC Xmu. All notes are passed through by default (assignable).	
Pedal	PASS THROUGH	PASS THROUGH
KONTROL49 ONLY		
Joystick X (CC16)	PASS THROUGH	PASS THROUGH
Joystick Y (CC17)	PASS THROUGH	PASS THROUGH
Mod wheel (CC1)	PASS THROUGH	PASS THROUGH
Switch 1	Bypass CCs	Bypass CCs
Switch 2	Mode Rotate Up	Mode Rotate Up
Pitch wheel	Pitchbend (always passed through, not assignable)	
MICROKONTROL ONLY		
Joystick X	Pitchbend (always passed through, not assignable)	
Joystick Up (CC1)	PASS THROUGH	PASS THROUGH
Joystick Down	Mode Rotate Up	Mode Rotate Up
Joystick Switch	Bypass CCs	Bypass CCs

The microKONTROL joystick Y-axis up/down may be separately modified to only send values above a certain threshold, in order to prevent triggering assigned functions when pitchbend is used. This is accomplished by editing the appropriate line in the *Global preferences* file. The default is to allow all +/- Y values.

Mackie Control

The **Mackie Control** module allows you to use LC Xmu to manage the Mackie Control, for on-the-fly host-switching with saved states and no conflict, control remapping, controller splitting and generic note/CC passthrough. Full 2-way communication is supported, including feedback that LC Xmu does not display — V-Pot LEDs, SMPTE/Bars display, channel signal-present LEDs, and LCD metering modes.

Any controller that emulates a Logic Control or Mackie Control may be used with this module, for example the Behringer BCF2000. If you have the original Logic Control, you must boot the Logic Control into Mackie Control mode for the LCD display to work — you'll need to update to firmware 1.02, available free from www.mackie.com/products/mcu/mcu_upgrade.html.

See [Setting up your controller: Mackie Control](#) for detailed setup instructions.

Control mapping

The default function maps supplied map each LC/MC control to the same function in LC Xmu. LC/MC controls that the host does not use are mapped to **PASS THROUGH**. You may use these via the LC Xmu passthrough port.

For use with LC Xmu, you may find it useful to map some unused or little-used buttons (if there are any) to **Host Select**, **Bypass CCs**, **Bypass Notes**, etc, as appropriate for your requirements.

Remapping any control also remaps its corresponding MIDI feedback — motorfader feedback, V-pot LED rings, button LEDs. If a control is mapped to **OFF** or **PASS THROUGH** it will not receive feedback.

The Mackie Control has touch-sensitive faders, so remapping a fader requires two steps:

- 1 Touch, move and **hold** the fader, then choose from the LC Xmu **Function Mapping** menu. Fader events are passed to LC Xmu as emulated Control events 1-9.
- 2 Release the fader, and choose again from the LC Xmu **Function Mapping** menu to map the corresponding Fader Touch event (notes 104–112), if required.

LC Xmu Mode

The LC Xmu Mode (**select**, **vselect**, etc) is global for all controllers in any LC Xmu instance, and will therefore affect the channel select buttons on the MC. If you are using the MC as your only LC Xmu controller, you should ensure LC Xmu is in **select** mode for simplicity.

LED buttons mapped to **Select Ch 1-8** are lit according to the state of the relevant function for the current LC Xmu mode. For example, in **mute** mode, **Select Ch 1-8** buttons correspond to **Mute Ch 1-8** and will be lit accordingly.

LED buttons mapped to directly select LC Xmu modes (**Mode:Select**, **Mode:Mute** etc) are lit when that mode is active. LED buttons mapped to **Mode Rotate Up** or **Mode Rotate Down** flash when the current mode is not **select**.

LC Xmu hijacks the MC SMPTE LED to display the current LC Xmu Mode status. If the current mode is **not select**, the SMPTE LED will flash.

Bypass & passthrough

When any MC fader, V-pot or LED button is set to **PASS THROUGH**, the fader position or V-pot LED ring is reset to its lowest position, or turned off for button LEDs.

The CC/note numbers and channels sent by bypassed controls is specified in the controller *Global preferences* file, inside the application package.

Bypassed faders send absolute 7-bit (0-127) values. Fader touch is not passed through.

Bypassed V-pots and Jogwheel may send data as absolute (0-127) or relative (signed bit) values, according to the **vpotpassthrough** or **jogpassthrough** entries in the controller *Global preferences* file, inside the application package. The default is to send absolute values. The V-pots and Jogwheel remember their last-used absolute value between bypasses.

Bypassed buttons may send data as momentary (press = 127, release = 0) or toggle format (value alternates between 127/0 on subsequent presses), according to the **notemap** entries in the controller *Global preferences* file, inside the application package. The default is to send absolute values. LED buttons remember their toggle state between bypasses.

When CCs are bypassed, the MC faders and V-pot LED rings are set to the last-used bypassed position (zero when first bypassed). V-pot LED rings use “wrap” display format (for absolute values) or are turned off (for relative values). When CCs are un-bypassed, the MC faders and

V-pot LED rings are returned to the correct state for the current host.

When notes are bypassed, all button LEDs are unlit (for momentary format) or restored to the last-used bypassed state (for toggle format). When notes are un-bypassed, button LEDs are restored to the correct state for the current host.

LED buttons mapped to **Bypass CCs** or **Bypass Notes** are lit according to the state of the relevant LC Xmu bypass LED (lit = active). LED buttons mapped to **Bypass All** are lit when notes and CCs are both active, flash when one of notes or CCs are bypassed, and unlit when both notes and CCs are bypassed.

LC Xmu hijacks the MC BEATS LED to display the current LC Xmu bypass status. If either notes or CCs are bypassed, the BEATS LED will flash. If *both* notes and CCs are bypassed, the BEATS LED will be lit.

Preferences file

The **Mackie Control** controller module loads a preferences file from inside the LC Xmu application package, at */Contents/support/controllers/Mackie Control/Global preferences*. The preferences file defines the following option:

showhost xxx

xxx = 0+ (milliseconds), default 600. Specifies the duration for displaying the host name on the LCD screen when switching host.

vpotpassthrough mode

mode = absolute / relative, default absolute. Specifies whether passed through V-pots use absolute 0-127 values or relative values (signed bit with acceleration).

jogpassthrough mode

mode = absolute / relative, default absolute. Specifies whether passed through Jogwheel uses absolute 0-127 values or relative values (signed bit without acceleration).

ccmap xxx yyy zz

xxx = 0-127. Input CC number (displayed by function map Note/CC Event).

yyy = 0-127, default same as xxx. Passed through CC number.

zz = 1-16, default 1. Passed through CC channel.

For example, an entry of **ccmap 8 7 8** causes the 8th Fader to send CC7 on channel 8 when bypassed.

CONTROLLERS

Mackie Control

notemap xxx yyy zz mode event

xxx = 0-127. Input note number (displayed by function map Note/CC Event).

yyy = 0-127, default same as **xxx**. Passed through event number.

zz = 1-16, default 1. Passed through event channel.

mode = toggle / momentary, default momentary. Toggle = value 127 / 0 on successive presses, momentary = value 127 on press, 0 on release.

event = note / cc, default note. Passed through event type.

For example, an entry of **notemap 24 64 1 toggle cc** causes the first Select button to send CC64 on channel 1 when bypassed, toggling between values 127 / 0 on successive presses.

backlighttimeout xx

xx = 0+ (minutes), default 15. Specifies the timeout for the LCD screen backlight sleep, to prevent LCD burn-in. 0 = no backlight.

Novation Remote

The **Novation Remote** module supports the Remote series and variations (excluding the Remote SL series), providing emulation of endless encoder acceleration factor for the Remote encoders. The eight endless encoders may be assigned to LC Xmu **Faders**, **Vpots**, or **Jogwheel**, for jump-free, no-pickup operation.

A template file is provided for the Remote, *Novation Remote LC Xmu.syx* in the *Controller Support* folder inside the LC Xmu application folder. Use Novation's **Remote Editor** application to upload this template file to an unused Remote template.

See [Setting up your controller: Novation Remote](#) for detailed setup instructions.

Rotary encoders

When using the supplied Remote template the encoders send a simple increment/decrement message, without a variable increment/decrement amount when the encoder is turned faster (sometimes called the "acceleration" factor). To provide better emulation of the LC/MC's V-Pot feel, LC Xmu emulates this acceleration factor by timing the incoming increment/decrement messages.

Preferences file

The **Novation Remote** module loads a preferences file from inside the LC Xmu application package, at */Contents/support/controllers/Novation Remote/Global preferences*. The preferences file specifies which CC numbers are relative encoders (as a continuous range) and the emulated encoder acceleration factor sensitivity:

encodernumbers xxx xxx

xxx = 0–127, default 24 31 (as per the supplied Remote template). Specifies the CC numbers that should be interpreted as relative encoders. Must be a continuous range.

encodersensitivity xx yy zz

xx = 0+ (milliseconds), default 0. Sets the time between Remote encoder messages to interpret as the maximum acceleration speed. Increasing this value will cause the emulated v-pot acceleration factor to reach maximum at slower Remote encoder speeds.

yy = 0+ (milliseconds), default 90. Sets the time between Remote encoder messages to

CONTROLLERS

Novation Remote

begin applying acceleration. Remote encoder messages slower than this value will have no acceleration factor applied. Increasing this value will begin to apply emulated v-pot acceleration factor at slower Remote encoder speeds.

zz = 1–15, default 8. Maximum emulated v-pot acceleration factor — a value of 8 means that when the Remote encoder is turned as fast as possible, the emulated v-pot moves 8x further than when the Remote encoder is turned slowly.

Default function maps 1

Host:	Logic	Cubase	TotalMix	Live	Reason
Fader 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8	Fader Ch 1-8
Encoder 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8	V-pot Ch 1-8
Knob 1-8	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Fader Button 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8	Select Ch 1-8
Knob Button 1	Assign:Track	Pan	Monitor Phones 1	Assign:Pan	Assign Button 1
Knob Button 2	Assign:Send	FX Send	Monitor Phones 2	Assign:Send	Assign Button 2
Knob Button 3	Assign:Plugin	Plug-Ins	Select Main	Assign:I/O	Pan
Knob Button 4	Assign:Instrument	EQ	Talkback	Assign:Devices	Plug-ins
Knob Button 5	Cursor Left	Send Effects	Master Mute	PASS THROUGH	EQ
Knob Button 6	Cursor Right	Instruments	Master Solo	PASS THROUGH	Dyn
Knob Button 7	Cursor Up	Page Down	Row Up	Page Left	Previous Track
Knob Button 8	Cursor Down	Page Up	Row Down	Page Right	Next Track
Encoder Button 1	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up	Mode Rotate Up
Encoder Button 2	Bypass CCs	Bypass CCs	Bypass CCs	Bypass CCs	Bypass CCs
Encoder Button 3	Modifier	Modifier	Modifier	Modifier	Modifier
Encoder Button 4	Modifier:Shift	Shift	Unity Gain	Modifier:Shift	Loop On-Off
Encoder Button 5	Flip	Flip	Dim Main	Flip	Previous Bar
Encoder Button 6	Global View	Master Effects	Mono Main	PASS THROUGH	Next Bar
Encoder Button 7	Bank Left	Bank Left	Bank Left	Bank Left	Channel Left
Encoder Button 8	Bank Right	Bank Right	Bank Right	Bank Right	Channel Right
Rewind	Rewind	Rewind	Channel Left	Rewind	Rewind
Fast Forward	Fast Fwd	Fast Fwd	Channel Right	Fast Fwd	Fast Fwd
Stop	Stop	Stop	PASS THROUGH	Stop	Stop
Play	Play	Play	PASS THROUGH	Play	Play
Record	Record	Record	PASS THROUGH	Record	Record
Touchpad Left	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Touchpad Right	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Touchpad Down	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Touchpad Up	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Modulation	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Expression Pedal	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Sustain Pedal	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Keyboard	All notes are passed through by default (assignable).				
Pitchwheel	Always passed through, not assignable.				

CONTROLLERS

Novation Remote

Default function maps 2

Host:	Soundtrack	Final Cut			
Fader 1-8	Fader Ch 1-8	Fader Ch 1-8			
Encoder 1-8	V-pot Ch 1-8	V-pot Ch 1-8			
Knob 1-8	PASS THROUGH	PASS THROUGH			
Fader Button 1-8	Select Ch 1-8	Select Ch 1-8			
Knob Button 1	F1	Home			
Knob Button 2	F2	Previous Marker			
Knob Button 3	F3	Next Marker			
Knob Button 4	F4	End			
Knob Button 5	Left	Arrow Left			
Knob Button 6	Right	Arrow Right			
Knob Button 7	Up	Arrow Up			
Knob Button 8	Down	Arrow Down			
Encoder Button 1	Mode Rotate Up	Mode Rotate Up			
Encoder Button 2	Bypass CCs	Bypass CCs			
Encoder Button 3	Modifier	Modifier			
Encoder Button 4	Undo	Undo			
Encoder Button 5	F5	Cancel			
Encoder Button 6	Cycle	Enter			
Encoder Button 7	Bank Left	Bank Left			
Encoder Button 8	Bank Right	Bank Right			
Rewind	Rewind	Rewind			
Fast Forward	Fast Fwd	Fast Fwd			
Stop	Stop	Stop			
Play	Play	Play			
Record	Record	PASS THROUGH			
Touchpad Left	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Touchpad Right	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Touchpad Down	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Touchpad Up	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Modulation	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Expression Pedal	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Sustain Pedal	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH	PASS THROUGH
Keyboard	All notes are passed through by default (assignable).				
Pitchwheel	Always passed through, not assignable.				

Change History

Controller updates (January 2006)

- **Behringer BCR2000 1.0.3:** Fast V-pot encoder turns no longer trigger very slow movement.

Controller updates (December 2006)

- **Novation Remote 1.0.3:** Encoders (CC 24-31) are now correctly identified in LC Xmu 2.2.0.
- **Generic Feedback 1.0.2:** Feedback is now sent correctly on the last-received MIDI channel.

LC Xmu 2.2.0 (October 2006)

- Universal Binary application for Mac OS X on PowerPC and Intel CPUs.
- **Fostex VM200 1.0.0:** New controller module supporting feedback, LEDs, endless encoders.
- Improved window grouping/stacking behaviour.
- Key commands to override processing of preferences at startup.
- More flexible CPU adjustment.
- Includes previous standalone controller updates.

Controller updates (June 2006)

- **Generic feedback 1.0.1:** Feedback to LED buttons sending CC messages now works correctly.
- **Behringer BCR2000 1.0.2:** Optional 15-LED V-pot feedback for encoders.
Modifier + Fader Ch1-8 now works correctly for fine fader control.

LC Xmu 2.1.0 (May 2006)

- Dedicated host support included for Apple Final Cut Pro.
- Dedicated host support included for Apple Soundtrack Pro.
- Fixed application hang when save-replacing function map from separate Preferences window, when any LC Xmu window is set to be always on top.
- Mapping generic non-endless knobs or faders to **V-pot Ch1-8** now works correctly.
- Notes may no longer be mapped to **Faders, V-Pots** or **Jogwheel**.
- **Modifier + V-pot** functionality (as Jogwheel) implemented for true endless encoders.
- Channel Status LEDs scale correctly when window is resized for LC Xmu instance 2 and higher.
- LC Xmu display may be placed at the very top edge of any monitor without reset at startup.
- Reduced flicker when moving the LC Xmu display window by dragging within the display.
- Generic feedback 1.0.0: Feedback-capable generic controller module.

- **Mackie Control 1.0.3:** Extensive user-configurable bypass operation, improved LED feedback, support for LCD backlight sleep, support for "external control" pedal input.
- **Generic MIDI mixer 1.0.3:** Bypass now works correctly, uses non-remapped input.
- **Korg KONTROL 1.0.2:** 8th character of each LCD display no longer used.
- **Behringer BCR2000 1.0.1:** Allowance for possible hardware encoder acceleration.
- LC Xmu no longer forces a full controller feedback reset when remapping a control from **OFF** to something else. Only the remapped control is updated.
- *Preferences* file added for each host folder inside the application package.
- Startup preferences added at `~/Library/Preferences/LC Xmu/startup.js`.
- *Startup.js* support for sending MIDI trigger event when switching host.
- *Startup.js* support for assign display emulation in Cubase.
- *Startup.js* support for adjusting LC Xmu CPU use.
- *Startup.js* support for opening other applications/files when LC Xmu starts.

LC Xmu 2.0.0 (September 2005)

- Mackie Control emulation.
- Dedicated support for multiple host applications, including host-specific LEDs, function names, Modes and Modifiers. Configurable via text files inside the application package.
- Host-switching on the fly with full saved state and no MIDI conflict.
- Dedicated support for specific hardware controllers, including support for endless encoders, motorfaders and LED/LCD display feedback where appropriate. Configurable options via text files inside the application package.
- Controls may now be mapped to LC/MC **V-pot Ch1-8** and **Jogwheel**.
- Multiple LC Xmu instances within a single app, for multiple LC/MC emulation.
- Up to four controllers may be merged per instance, each has a separate function map.
- Copy/paste between function maps.
- Horizontally-scalable, floatable, linkable displays, with configurable spacing/sections.
- Separate Preferences window, shared and/or per-instance, with configurable sections.
- Five additional LC Xmu Modes for improved access to the full range of LC/MC buttons.
- **Modifier** function provides alternate functionality for many controls.
- Key commands for display state, **Host Select**, Modes and Bypasses available while LC Xmu is the foreground application.
- Completely rewritten function map and preferences file-handling for improved reliability.
- Completely rewritten manual in PDF format.
- Removed mouse click toggling of display state, Bypasses, Modes or LEDs.
- Removed MIDI functions for window state.
- Removed **Response** setting.
- Removed passthrough for Sysex data.

LC Xmu 1.2.1 (May 2004)

- Soft Takeover Indicator display added.
- Full 0-127 control range is now usable in Logic for **Fader Ch 1-8** controlling Volume with **Flip** off, and for **Fader Master** at all times.
- Note Bypass via mouse click on display now works correctly.
- Fixed bug with stray CCs passing through to Logic when only notes should be bypassed.
- Fixed bug preventing LC Xmu window from being placed on a second monitor to the left of the main monitor.

LC Xmu 1.2.0 (April 2004)

- Channel Status display strip added.
- Fine adjustment modifier for **Fader Ch1-8** added.
- Compact View added.
- Window state may be toggled by key command or midi.
- Key command workaround for the “no window at startup” bug.
- Support for multiple instances of LC Xmu as separate applications added.
- **All off** button added to the Function Map section.
- **All thru** button added to the Function Map section.
- **Flash LEDs** preference setting removed.
- Performance further optimized to reduce CPU load.
- **Response** setting added.

LC Xmu 1.1.1 (December 2003)

- Bug fix for direct-selection of Modes via MIDI.

LC Xmu 1.1.0 (December 2003)

- Support for Logic Audio/Express added.
- Improvements to passthrough for Channel Pressure and Program Change.
- Passthrough for Sysex and Polyphonic Pressure added.

LC Xmu 1.0.0 (December 2003)

- First public release, for Logic Gold/Platinum/Pro only.

