LAUNCH • PAD

PERFORMANCE CONTROLLER

Operation Manual

E-mu Systems, Inc.

Operation Manual

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Important Notice:
In order to obtain warranty service on your Launchpad unit, the serial number sticker must be intact and you must have a sales receipt or other proof of purchase. If there is no serial number sticker on Launchpad, please contact E-mu Systems at once.

This product is covered under one or more of the following U.S. patents: 4,404,529; 4,506,579; 4,699,038; 4,987,600; 5,013,105; 5,072,645; 5,111,727; 5,144,676; 5,170,367; 5,248,845; 5,303,309; 5,317,104; 5,342,990; 5,430,244 and foreign patents and/or pending patents. Launchpad is a registered trademark of E-mu Systems, Inc.

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Introduction

Launchpad is a hot new performance MIDI controller designed to merge perfectly with your existing gear. Launchpad has all the extra controls you need and the ability to control multiple pieces of your MIDI gear while taking up less than a foot of space.

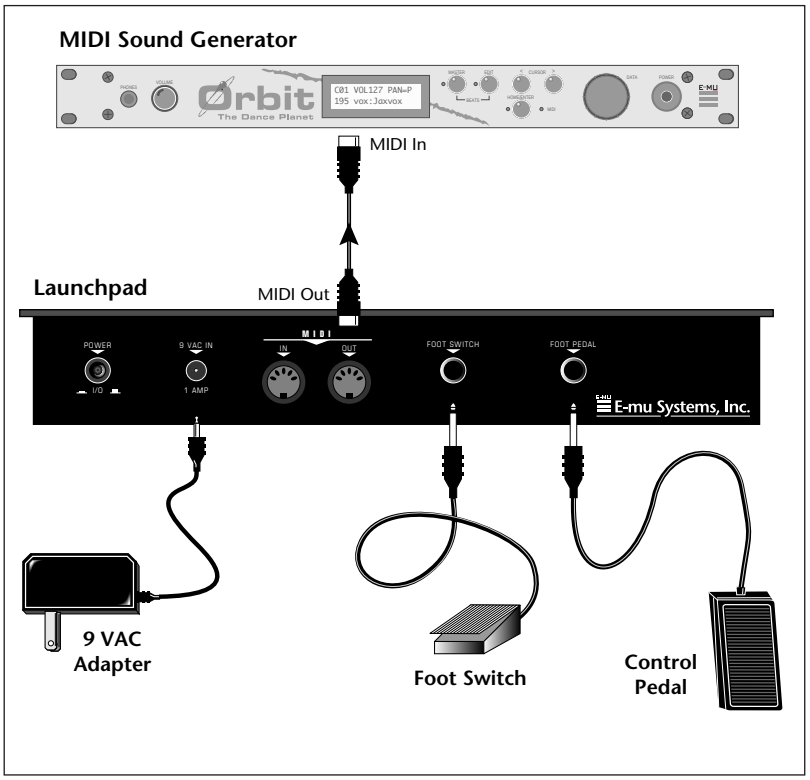
Launchpad's logical control surface is a musical instrument unto itself, making it easy to turn your ideas into reality.

Launchpad's key features are listed below.

- Fast, intuitive user interface
- Compact and durable metal package
- One octave, velocity sensitive drum pad keyboard
- +5 octave, -4 octave transposition range
- 12 semitone fine tuning range
- 5 real-time, programmable sliders
- Pitch knob, thumby button, footswitch and expression pedal input
- 6 latched trigger buttons with independent MIDI channels
- MIDI machine control
- Sends MIDI clock
- Sends preset, bank and song command changes
- MIDI merging
- Setup can be saved or restored via MIDI SysEx

All parameters are stored in nonvolatile memory and can be transmitted or received as SysEx parameters.

Connections



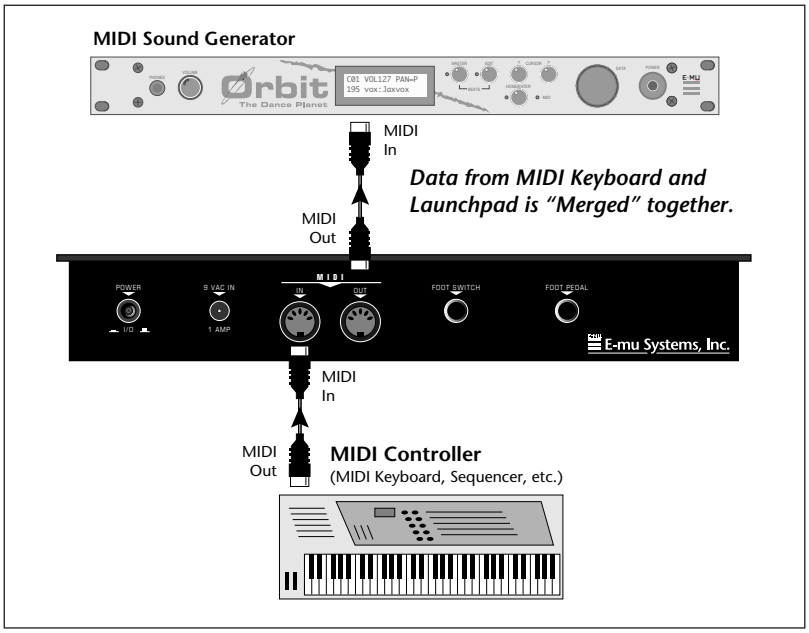
Power Input
Connects to the 9VAC wall adapter and supplies power to the module.

Power Switch
Turns Launchpad On and Off.

MIDI Out
Connect the MIDI Out to the MIDI In port of a MIDI sound generator such as a MIDI keyboard or sound module. The MIDI Output can also be used for transferring Launchpad's memory contents to a computer or sequencer for backup.

MIDI In

Launchpad merges the MIDI data it generates with the data received at the MIDI In port. This is a handy feature when you want to connect two controllers to the same MIDI sound module or keyboard. The MIDI In port can also be connected to a computer or sequencer to restore Launchpad's memory contents that have been backed up.



Footswitch Input

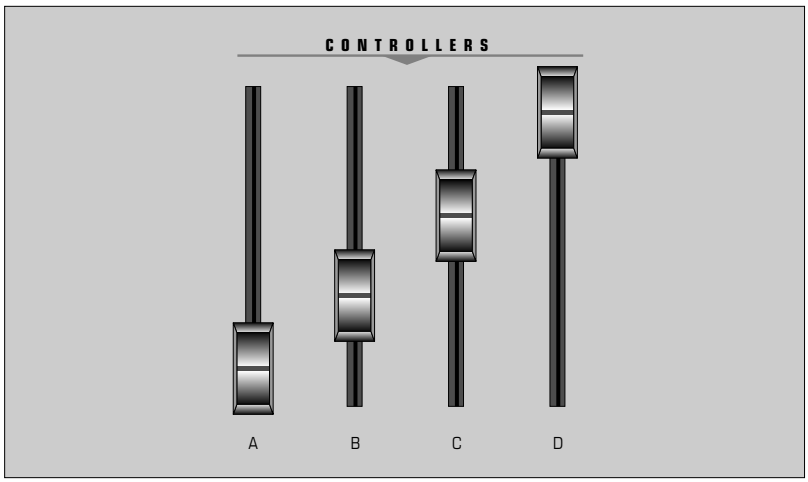
Launchpad accepts a momentary-type footswitch (either normally open or normally closed). The footswitch can be programmed to any MIDI continuous controller number.

Foot Pedal Input

A control foot pedal can be used as a realtime performance control in the same manner as the front panel sliders. The pedal can be programmed to any MIDI continuous controller number.

The foot pedal can be either a voltage (which outputs a DC voltage from 0-9 volts) or a resistance type. *(See page 21 for wiring diagrams for the two pedal types.)*

Main Controls



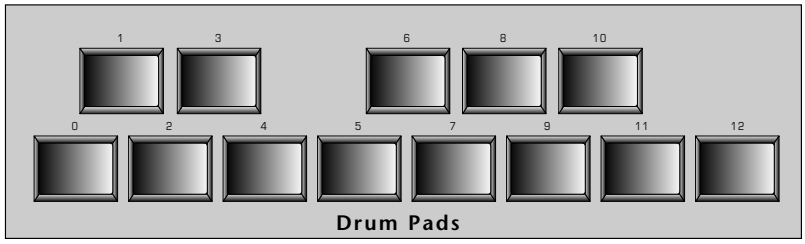
Realtime Controllers/Foot Pedal

Realtime MIDI controller messages are sent out on the MIDI channel currently selected by the MIDI channel selector switch whenever a slider (or the foot pedal) is moved. Each of the four sliders and footpedal input can be programmed for any MIDI controller channel from 0-127. Controller value is 0 at the bottom and 127 at the top of the slider's travel.

☞ *To Assign the Realtime Controllers*

1. Press **Select Control**. The Select Control LED will be flashing.
2. Move the **desired slider or pedal**. The Enter MIDI Controller/Note LED and the Enter Number LED will be flashing.
3. **Enter the MIDI Controller number** from the Drum Pads. The Enter MIDI Controller/Note LED and the Enter Number LED will continue to flash. The Save LED will now also be flashing.
4. Press the **Save** button to save the assignment.

✗ To **Abort the Operation** at any point, press the **Select Control** button again.



Drum Pads

Drum Pads

Pressing a drum pad sends a MIDI Note-On message with detected velocity on the currently selected MIDI channel. A MIDI Note-Off message is sent as soon as the pad is released.

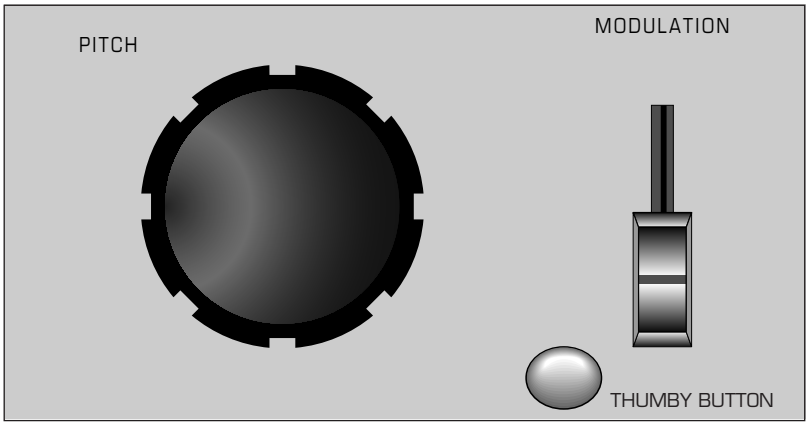
If the Transpose knobs are set to C and Off (straight up position), the Drum Pads send the following note numbers:

Drum Pad 0	note 60 (Middle C)	**Drum Pad 6**	note 66
Drum Pad 1	note 61	**Drum Pad 7**	note 67
Drum Pad 2	note 62	**Drum Pad 8**	note 68
Drum Pad 3	note 63	**Drum Pad 9**	note 69
Drum Pad 4	note 64	**Drum Pad 10**	note 70
Drum Pad 5	note 65	**Drum Pad 11**	note 71
		Drum Pad 12	note 72

Entering Data Using the Drum Pads

The Drum Pads are also used to enter the values for Bank, Preset, Song, Note, MIDI Clock Rate, and MIDI Controller Numbers.

Note: A number can be entered with as many digits as desired (1, 2, or 3). If more than 3 digits are entered, only the last 3 are used for the value. For example, if the pads 2, 3, 5, 4, 6 are pressed, the value accepted is 5, 4, 6 (which is illegal in any case). A single digit can be entered followed by the **Save** button. You do not have to enter all three digits (as in 0, 0, 2).



Pitch Wheel

This spring-loaded control varies the pitch. Pitch change messages are sent out on the MIDI channel currently selected with the rotary MIDI channel select switch. The amount of pitch bend is controlled by the receiving device.

Modulation Slider

Realtime MIDI controller messages are sent out on the MIDI channel currently selected by the MIDI channel selector switch whenever the slider is moved. The slider can be programmed for any MIDI controller channel from 0-127. Controller value is 0 at the bottom and 127 at the top of the slider's travel.

☞ *To Assign the Modulation Slider*

1. Press **Select Control**. The Select Control LED will be flashing.
2. Move the **Mod. Slider**. The Enter MIDI Controller/Note LED and the Enter Number LED will be flashing.
3. **Enter the MIDI Controller number** from the Drum Pads. The Enter MIDI Controller/Note LED and the Enter Number LED will continue to flash. The Save LED will now also be flashing.
4. Press the **Save** button to save the assignment.

✗ To **Abort the Operation** at any point, press the **Select Control** button again.

Thumby Button/Footswitch

The thumby button and the footswitch (if connected) generate controller values of 127 when pressed and a value of 0 when released. Their function is determined by the receiving device. The switches transmit on the currently selected MIDI channel and can be assigned to any MIDI controller number.

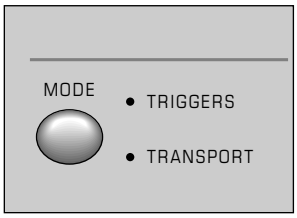
☞ *To Assign the Thumby Button or Footswitch*

1. Press **Select Control**. The Select Control LED will be flashing.
2. Press the **Thumby Button**. The Enter MIDI Controller/Note LED and the Enter Number LED will be flashing.
3. **Enter the MIDI Controller number** from the Drum Pads. The Enter MIDI Controller/Note LED and the Enter Number LED will continue to flash. The Save LED will now also be flashing.
4. Press the **Save** button to save the assignment.

✗ To **Abort the Operation** at any point, press the **Select Control** button again.

Triggers/Transport Mode Button

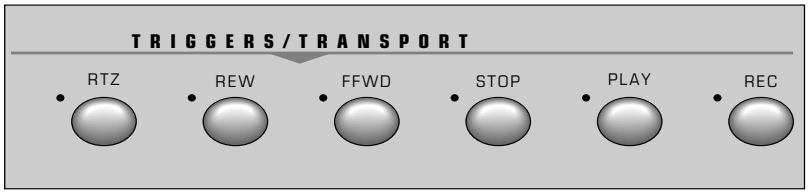
This switch is used to change the function of the Trigger/Transport control buttons. The LEDs next to the button indicate the current mode.



• When the **Transport** LED is lit, the buttons are used to generate MMC (MIDI Machine Control) and Sequencer Control commands.

• When the **Triggers** LED is lit, the trigger buttons send Note-On/Note-Off commands on the specific MIDI channel that has been programmed for that button. Each Trigger button can transmit on a different MIDI channel and are latched in the Note-On/Note-Off state, indicated by the LED next to each button.

• You can switch between the two modes without disturbing the functions of either the Triggers or Transport controls.



Triggers/Transport Controls

The **Trigger buttons** can be assigned to any play key on any MIDI channel. They are quite useful when you want a note to be continuously held for a background effect. Pressing a trigger button causes the assigned Note-On message to be sent out on the assigned MIDI Channel. Pressing the trigger button again causes a corresponding Note-Off message to be sent. The Trigger buttons are latched and an LED indicator next to the switch illuminates to indicate the Note-On condition.

In **Transport Mode**, the six buttons transmit both MMC commands and System Common Sequencer Control commands.

> **MMC commands** - can be used to operate the transport controls of digital audio recorders.
>
> **Sequencer Control commands** - can be used to operate the transport controls of MIDI sequencers.

The **Play** button sends a Sequencer **Song Start** command along with the **MMC Start** command.

The **Stop** button sends a Sequencer **Song Stop** command along with the **MMC Stop** command.

IMPORTANT: MIDI Clock **must** be set to something other than zero for Song Start and Song Stop to be transmitted. Song Start is always issued on multiple presses, and no support of Song Continue is provided.

☞ *To Assign the Trigger Buttons*

1. Press **Select Control**. The Select Control LED will be flashing.
2. Press the desired **Trigger Button**. The Enter MIDI Controller/Note LED, the Enter MIDI Channel LED and the Enter Number LED will all be flashing.

3. **Enter the MIDI Controller number** from the Drum Pads. The Enter MIDI Controller/Note LED, the Enter MIDI Channel LED and the Enter Number LED will continue to flash.
4. **Enter the MIDI Channel number** by selecting it on the rotary MIDI channel switch. The Enter MIDI Controller/ Note LED, the Enter MIDI Channel LED and the Enter Number LED will continue to flash. The Save LED will now also be flashing.
5. Press the **Save** button to save the assignment.

✗ To **Abort the Operation** at any point, press the **Select Control** button again

Inc/Dec Buttons

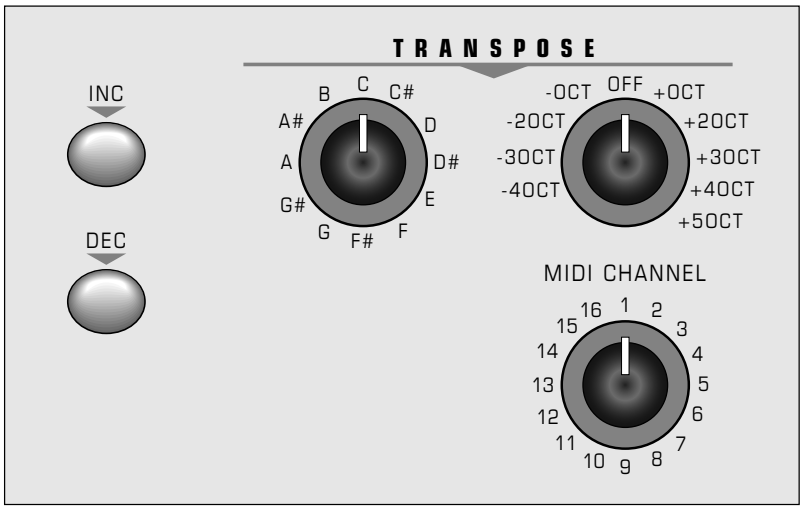
These buttons are used to increment or decrement the last valid song, bank, or preset number. The Inc/Dec buttons are enabled whenever the **Enter Number** LED is flashing after having pressed either of the SONG, BANK, or PRESET performance select buttons. Each time the Inc or Dec button is pressed, the appropriate song, bank or preset change messages are sent out on the currently selected MIDI channel.

If the entry is aborted (by pressing buttons other than Save, Drum Pads, Inc, or Dec buttons), then no song, bank, or preset change messages are sent.

NOTE: It is NOT necessary to press the **Save** button when using the Inc or Dec buttons in order to send a song, bank, or preset change message. Each time the Inc or Dec buttons are pressed, the last valid song, bank, or preset number that was sent is incremented or decremented.

☞ *To Increment a Preset on MIDI Channel 3:*

1. **Move MIDI Selector Switch** to MIDI channel 3.
2. **Press the Preset button** under the Performance Select heading.
3. **Press the Inc button** to increment the current preset by 1.
4. **Press the Inc button** again to increment the current preset again.

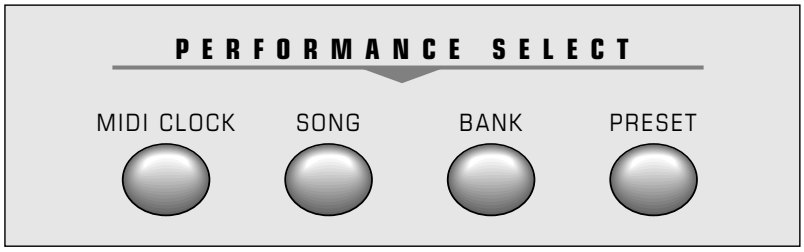


Transpose Knobs

The two Transpose rotary switches define the notes sent by the Drum Pads. The first control varies the Drum Pad interval by up to ±12 semitones. If the same sound is placed across the entire keyboard of your MIDI keyboard (sound source), this control will have the effect of changing the key of the drum pads. If your MIDI sound source is programmed with different sounds on each key, this control will shift the assignment of sounds on each Drum Pad. The second control changes the Drum Pad octave up from 1-5 octaves or down from 1-4 octaves.

MIDI Channel Select Switch

A 16-position rotary switch is used to specify the MIDI Channels for sending MIDI messages. The messages from the Sliders, Pitch Wheel, Pedal, Footswitch, Thumby Button, and Drum Pads are sent out on the MIDI channel currently selected with this switch. (The messages from the Trigger buttons are sent out on their own assigned MIDI channels.)



Performance Select Buttons

Bank Select Button

Bank Select allows you to select MIDI Preset Banks on the currently selected MIDI channel. MIDI presets are grouped into banks of 128 presets. **Note:** E-mu uses the MMA standard regarding Bank Select. Some manufacturers (such as Roland) use their own standard and are not supported.

☞ *To Change a MIDI Preset Bank:*

1. **Select the MIDI Channel** of the Bank you wish to change using the MIDI Channel knob.
2. **Press the Bank button.** The Enter Number LED will flash.
3. **Enter the desired Bank number** using the Drum Pads. You can also use the Inc/Dec buttons to select a new Bank. The Save LED will be flashing.
4. **Press the Save button**. The Save LED will stop flashing.
5. **Press the Inc button** to increment the current preset again.

When the Save button is pressed, the Bank Change message is sent out on the selected MIDI channel along with the current preset value.

Song Select Button

MIDI Song Select can be used in conjunction with Launchpad's Transport Controls to select, play and stop sequences from a MIDI sequencer. When used with the E-mu Orbit sound module, Song Select will select the current beat when in Beats mode.

☞ *To Select a New Song:*

1. **Press the Song button.** The Enter Number LED will flash.

2. **Enter the desired Song number** from 0-127 using the Drum Pads. You can also use the Inc/Dec buttons to instantly select a new Song. The Save LED will be flashing.
3. **Press the Save button**. The Save LED will stop flashing and the selected Song number will be transmitted.

✗ To Abort the Operation at any point, press the Song Select button again

Preset Select Button

This control allows you to select presets (programs) on the currently selected MIDI channel. Preset numbers can be selected by entering the exact number (using the Drum Pads) or by using the Inc/Dec buttons.

When using the Inc/Dec buttons to change presets, Launchpad stays in the Preset Select mode until you change it by pressing Save or one of the other Performance Select controls. This frees up the Drum Pads for performance while the Inc/Dec buttons control preset changes.

☞ *To Select a New Preset:*

1. **Press the Preset button.** The Enter Number LED will flash.
2. **Enter the desired Preset number** from 0-127 using the Drum Pads. You can also use the Inc/Dec buttons to instantly select a new Preset. The Save LED will be flashing.
3. **Press the Save button**. The Save LED will stop flashing and the selected Preset number will be transmitted. You don't have to press Save if you used the inc/dec buttons.

✗ To Abort the Operation at any point, press the Preset Select button again

MIDI Clock Rate

Launchpad can control the tempo of other devices using MIDI Clock. The MIDI Clk button specifies the rate of the clock.

☞ *To Select a MIDI Clock Rate:*

1. **Press the MIDI Clock button.** The Enter Number LED will flash.

2. **Enter the desired Clock Rate** from 30-255 bpm using the Drum Pads. The Save LED will be flashing.
3. **Press the Save button**. The Save LED will stop flashing and Launchpad will immediately begin transmitting MIDI Clock at the selected rate.
4. To stop transmitting MIDI Clock, **enter a MIDI Clock Rate of 0.**

✗ To Abort the Operation at any point, press the MIDI Clock button again

Select Control Button

When this button is pressed, its associated LED begins to flash reminding you to select one of the controls for assignment of a MIDI Controller or Note number. The controls are selected by pressing or moving them as follows:

Triggers	Press the desired trigger button.
Sliders	Move the desired slider.
Thumby	Press the button.
Pedal	Move the pedal.
Footswitch	Step on the switch.

If the LED is already flashing when the button is pressed, the LED stops flashing. This aborts the operation.

When a control is selected, the Enter Number the associated LED flashes to direct the attention of the user to the drum pads for numeric entry operations). If a MIDI channel number is required (as in the case of the trigger buttons), the Enter MIDI Channel LED will also be flashing. The Save LED will begin flashing when all the necessary data has been entered

Press the Save button to complete the entry process. All LEDs will be extinguished.

Save Button

The LED associated with this button begins to flash as soon as the user has entered valid data for a particular operation. In order for the data entry to be complete, you must press the Save button.

• If you want to abort the operation, any other button except for the Save Button, Drum Pads, or the Inc/Dec buttons may be pressed.

Other Functions

Changing the Transpose Parameter on Orbit

Orbit can be remotely transposed using this hidden function.

☞ *To Transpose Orbit*

1. **Press and Hold the Thumby Button**
2. **Use the Inc/Dec buttons to increment or decrement transpose.** The last transpose setting is remembered until Launchpad is powered down.

Restoring the Factory Default Settings

If the Save button is pressed and held down while pressing Drum Pad 0, the factory defaults for all parameters are restored.

The following factory defaults are assigned:

Slider A ..... Controller 1
Slider B ..... Controller 2
Slider C ..... Controller 3
Slider D ..... Controller 4
Mod Slider ..... Controller 1
Trigger 1 ..... Note number 60 (middle C)
Trigger 2 ..... Note number 61
Trigger 3 ..... Note number 62
Trigger 4 ..... Note number 63
Trigger 5 ..... Note number 64
Trigger 6 ..... Note number 65
Thumby ..... Controller 65
Pedal ..... Controller 7
Footswitch ..... Controller 64

Initiating a MIDI SysEx Data Dump

All parameters are stored in nonvolatile memory and can be transmitted or received as SysEx parameters. This procedure transmits all parameters settings from the MIDI Out port to a computer or sequencer.

☞ *To Initiate a SysEx Data Dump*

1. **Connect MIDI Out of Launchpad to MIDI In on the receiving device.**
2. **Press the Select Control and Save buttons simultaneously.** All current device settings are transmitted out the MIDI output as SysEx data.

Receiving a MIDI SysEx Data Dump

This procedure transmits all parameters settings from the MIDI Out port to a computer or sequencer.

☞ *To Initiate a SysEx Data Dump*

1. **Connect MIDI In of Launchpad to MIDI Out on the sending device.**
2. Send the previously recorded SysEx packet of information to Launchpad using your sequencer or computer. Launchpad's memory contents will be replaced with the new values.

MIDI Merging

Merge is always active and merges the MIDI data coming into the MIDI In with the data generated by the device itself to the MIDI Out jack.

Applications

Using Launchpad with the Orbit Sound Module

Orbit - the dance planet, is E-mu's hot new sound module. Many of Launchpad's performance features were specifically designed to add intuitive and responsive control to Orbit's fantastic sound generating capabilities.

Some of these tips are specific to Orbit, but most can be used with other MIDI sound modules as well.

Set up the MIDI Channels

One of the most powerful features of Orbit is that it can play on all 16 MIDI channels. Launchpad has a handy MIDI channel selector to direct the Drum Pads and Realtime Controllers. By setting up Orbit in this way, you can switch presets by simply selecting a new MIDI channel on Launchpad.

1. Choose 15 of your favorite Orbit presets and assign them to different MIDI channels. *(Select the MIDI channel on the main screen of Orbit, press Enter, then select the desired preset.)* MIDI channel 16 is used by "Beats Mode" so don't assign anything to this channel.

Set up the Transport Controls

In order to remote control Beats Mode on Orbit, MIDI clock has to be running. So let's set the MIDI clock rate to say, 120 beats per minute.

1. **Press MIDI Clock.** The Enter Number LED will be flashing.
2. **Enter 1-2-0 using the Drum Pads.** The Save LED will now also be flashing
3. **Press Save to enter the Tempo.** MIDI Clock is now enabled and set to 120 bpm.

Place Orbit in Beats Mode

Orbit has to be in Beats Mode before it will accept Sequencer Start and Stop commands.

1. **Press and hold both the Master and Presets buttons** at the same time to place Orbit into Beats mode.
2. **Press the Mode button on Launchpad** so that the Transport LED is lit.
3. **Press the Play button on Orbit to start Beats Mode.** The Stop button will stop Beats Mode.

- As the beats are playing, notice that you can play the Drum Pads and select transpositions and MIDI channels without affecting the beats.

Change the Beat

1. **Press the Song button.**
2. **Press the Increment button** to increment the song by one. The new beat will begin as soon as the one playing has finished.

- You can also use the Drum Pads to enter a specific beat number after pressing the Song button. Press Save to enter the number and start the new beat.

Change the Preset

You can change presets on the fly using the performance select controls.

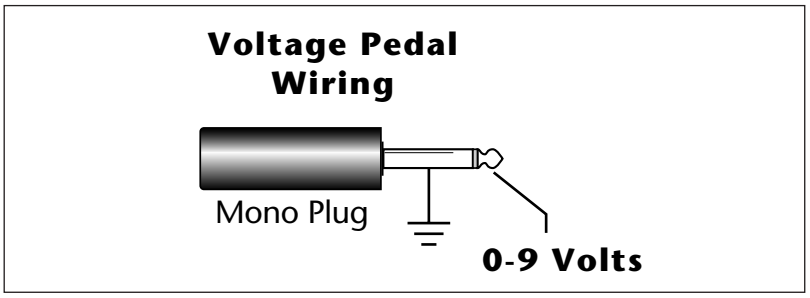
1. **Select the MIDI channel using the rotary knob**.
2. **Press the Preset button.**
3. **Press the Increment button** to increment the preset by one. The new preset will instantly be selected.

- You can also use the Drum Pads to enter a specific preset number after pressing the Song button. Press Save to enter the number and select the new preset.

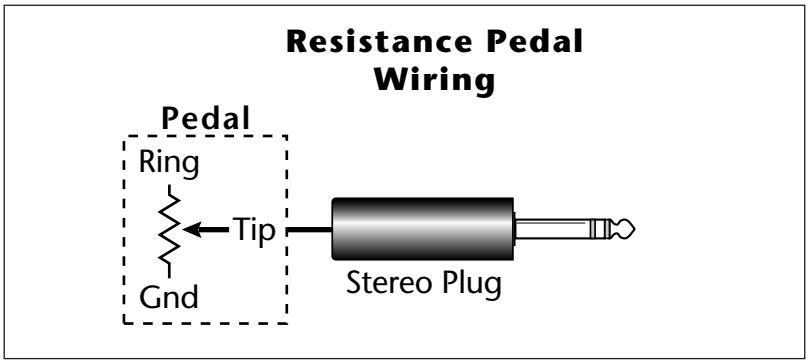
Foot Pedal Wiring Diagrams

Launchpad accepts either a Voltage or Resistance type of control Foot Pedal. The two types of pedals are shown below.

- A Voltage Pedal outputs 0-9 volts when the pedal is depressed. Usually these pedals consist of a 9 volt battery connected to a potentiometer.



- A Resistance Pedal uses a stereo plug and is wired as shown in the diagram below.



LaunchPad SysEx Format

• ***Press Select Control and Save*** to dump the contents of memory.

F0	**system exclusive status byte**
18	**E-mu ID byte**
0D	**product id byte**
00	**device id byte**
01	**send/receive byte** (00=data request, 01=dump follows)
01	slider A continuous controller number
02	slider B continuous controller number
03	slider C continuous controller number
04	slider D continuous controller number
01	small modulation slider continuous controller number
07	foot pedal continuous controller number
40	footswitch continuous controller number
3C	trigger 1 note number
3D	trigger 2 note number
3E	trigger 3 note number
3F	trigger 4 note number
40	trigger 5 note number
41	trigger 6 note number
01	trigger 1 channel
01	trigger 2 channel
01	trigger 3 channel
01	trigger 4 channel
01	trigger 5 channel
01	trigger 6 channel
42	thumby button continuous controller number
F7	**EOX**

Notes:

1. If you send in an illegal value, it ignores just that one parameter and sends the rest of the string properly.
2. The entire string must be sent to a Launchpad except when requesting a dump. If you send less than the full 26 bytes, the message will be ignored.