



MP-201 Multi-Pedal Manual

Firmware v2.0 Addendum





MP-201 Multi-Pedal Manual Firmware v2.0 Addendum

This document provides information about the features and menu items which are new in MP-201 firmware version 2.0. For a more complete description of the various channel modes and functions, please read the MP-201 manual in addition to this document.

The MP-201 is an incredibly flexible and powerful device designed to immediately expand your creative sonic environment. While many aspects of this manual are technical and can at first be overwhelming, remember - the ultimate guide is your ears! Don't be afraid to just plug in, try presets, and have fun without worrying about the inner-workings. You will find that immediately you will be creating sounds and textures with your instruments that were previously unimaginable.

New parameter for all channel modes:

CHAN OUTPUT - (CV AND MIDI, CV ONLY, MIDI ONLY).

Control the type of output for each channel, saved per preset. This allows you to switch between presets intended to control only analog or only MIDI gear, without needing to unhook any cables. Note: **MIDI to CV** channel output is always **CV ONLY**.

Changes to Channel Mode **EXPRESSION**:

CV LAG - (OFF, ON). Parameters are **RISE TIME** (0 - 4095), **FALL TIME** (= Rise time, or 1-4095). **CV LAG** slows the change in output voltage, with independent control of rise time and fall time. Only the CV Output is affected by **CV LAG**; MIDI output follows Foot Pedal movement with no lag. This way if you record MIDI while sweeping the foot pedal and then play back the MIDI to the MP-201, the channel CV Output will respond exactly as it did the first time, when the pedal movement was recorded. Note that **CV LAG** also serves the function of MIDI CC to CV smoothing, if enabled.

Changes to Channel Mode **LFO**:

NOISE - has been removed from the list of LFO waveforms, and promoted to its own **NOISE** Channel Mode.

TAP TEMPO - for LFO channels has been greatly improved. LFO Tap Tempo now features a running average for more accurate and intuitive tempo matching, and the overall performance of Tap Tempo is faster and more responsive than in firmware v1. Additionally, a bug has been fixed that was causing trouble with Tap Tempo in Quad Mode. Tap Tempo now works on any/all channels in both Single and Quad modes of operation, with no restrictions.

MIDI Sync - number of MIDI Clock Divisions has been expanded. Now offers 16 clock divisions:

(8 WHOLE, 4 WHOLE, 3 WHOLE, 2 WHOLE, WHOLE DOT, WHOLE, 1/2 DOT, 1/2, 1/4 DOT, 1/4, 1/8 DOT, 1/8, 1/16 DOT, 1/16, 1/32 DOT, 1/32)

CV LAG - CV Lag as described above for **EXPRESSION** channels is available for LFO channels also. Acts like a fixed-frequency lowpass filter for **TRIANGLE** waveform LFOs, which can be interesting, but is probably most suited for **SQUARE** and **SAMPLE-HOLD** LFO waveforms.

This allows you to create interesting smoothed sample and hold modulations using the **S+H RANDOM** Waveform, and various trapezoid shapes using the **SQUARE** wave.



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Changes to Channel Mode **GATE**:

Previously the most simple of MP-201 Channel Modes, the humble **GATE** could be either On or Off, Momentary or Latching. Now **GATE** Mode is perhaps the most powerful and richly-featured Channel Mode of them all.

The first change you will notice is the **GATE SOURCE** selection. Options are **FOOT SWITCH**, **MIDI NOTES**, or **PEDAL CV**.

FOOT SWITCH preserves the functionality of **GATE** Mode in firmware v1: You can set **FS MODE** to Latching or Momentary, to control how the channel toggles On/Off in response to the foot switch, and you can set **INITIALSTATE** to control whether the gate is On or Off when the preset is loaded.

For Momentary Gates, **INITIALSTATE** sets whether the gate is Normally-Off (Momentary-On) or Normally-On (Momentary-Off).

If **GATE SOURCE** is set to **MIDI NOTES**, then the channel behaves as a Normally-Off, Momentary-On Gate which turns on in response to MIDI notes on the selected MIDI channel.

VELO TRIGGER allows you to set a MIDI Velocity (1-127) below which the Gate will not turn on.

TRIGGER MODE - controls how the Gate behaves in response to multiple MIDI notes at a time.

LEGATO: In this Trigger Mode, the Gate will turn on in response to the first MIDI NoteOn message, and will remain On continuously for as long as any notes remain held. When the last NoteOff message is received and there are no notes on the note stack, then the Gate will turn Off.

RETRIGGER: The Gate will turn momentarily Off and then On again for each new MIDI note. If the Gate is controlling an Envelope, this will cause the Envelope Generator to fire with each new note played, even if other notes are still held. These Trigger Modes are designed to behave similarly to the Gate functions of most monophonic analog synthesizers.

The final **GATE SOURCE** option is **PEDAL CV**. This mode reads the scaled voltage coming from the MP-201 Foot Pedal, and allows you to set a **THRESHOLD** above which the Gate will turn on, and below which it will turn off.

You can set **HEEL VALUE** and **TOE VALUE** parameters to adjust exactly the point at which the Gate will act, including setting **TOE VALUE** less than **HEEL VALUE** in order to reverse the Off and On directions (e.g. to have a Gate that is On when the pedal is in the Heel position and Off when the pedal is moved to the Toe position).

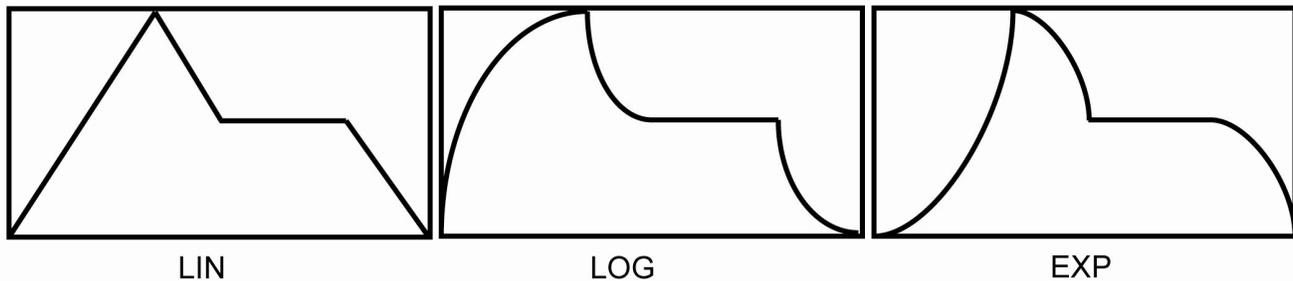
When Gate Source is set to MIDI Notes or Pedal CV, the Channel On/Off footswitch does not turn the Gate on and off (as it does when Gate Source = Foot Switch); instead, the Channel On/Off footswitch disables or enables triggering of the gate by the selected Gate Source. That is to say, that the footswitch toggles whether or not the Gate will respond to MIDI Notes or to Pedal movements. When Gate response is disabled, this is indicated by "---" shown on the LCD where the Channel Mode (**GATE**, **EG**) would normally be displayed.

The **GATE / EG** parameter allows you to select **GATE** or **ENVELOPE CV** output for this channel. Envelope Generation is a major new feature for the MP-201. Envelopes appear as CV Output only; the MIDI output for Gate channels is the same regardless of **GATE / EG** setting.

ENV SHAPE - allows you to select from three basic Envelope Shapes: Linear, Logarithmic and Exponential.

The **ENV SHAPE** menu has a fourth option, **COMPLEX**. In **COMPLEX** mode you can program a separate envelope shape (**LIN**, **LOG**, **EXP**) for the Attack, Decay and Release stages individually.

Mathematics experts will note that the “Logarithmic” and “Exponential” envelope shapes do not behave exactly like those names would imply. If you look only at the Attack phase, then the names LOG and EXP are close to accurate in describing the shape of the envelope. However, the Decay and Release phases give almost the opposite shape. The actual functions used to create MP-201 envelopes might more accurately be called “accelerating change in voltage” and “decelerating change in voltage,” but these names might be confusing to the user, and, more to the point, they would not fit on the MP-201 display. In actual use, you should experiment to find what envelope shape gives the best effect for your purpose, and remember that the **COMPLEX** envelope setting allows you to choose a different shape for each envelope stage, to assemble precisely the envelope shape you want to hear.



An MP-201 envelope has five stages: Hold, Attack, Decay, Sustain, and Release. All stages have values in the range 0-4095. The duration parameters (Hold, Attack, Decay, Release) all have a range of roughly 1 millisecond to four seconds, while the Sustain level is adjustable between 0V and +5V.

The **HOLD** stage begins the moment the Gate is triggered. If Hold is enabled, the CV output is held at 0V for an adjustable duration between ~1 millisecond and 4 seconds, before the start of the Attack stage.

ATTACK - sets the duration for the CV output to go from 0V to +5V.

DECAY - sets the duration for the CV output to go from +5V to the Sustain voltage, which is of course set by **SUSTAIN**.

Normally, the output will remain at the Sustain level for as long as the Gate is On.

RELEASE - sets the duration for the CV output to fall to zero once the Gate is turned Off.

EG LOOPING - allows a choice between **ONE SHOT**, which is normal **HADSR** envelope generation as described above, or **ADR LOOP**.

If **ADR LOOP** is selected, the envelope behaves a bit differently. When the Gate is turned On, the envelope begins as before, with a Hold time if enabled and the Attack and Decay stages. When the envelope reaches the Sustain voltage level, however, it immediately switches to the Release stage.

At the end of the Release stage when the output voltage reaches zero, the Attack stage begins again. The envelope will continue cycling through the Attack, Decay and Release stages for as long as the Gate is on. Whenever the Gate is turned Off, a Release stage is initiated and the output falls again to zero.



Gate channels and MIDI:

A Gate channel can output a MIDI CC (0-127) and/or a MIDI Note (0-127). The MIDI CC value will be 127 when the Gate is turned On, or 0 when the Gate is turned Off.

If **MIDINOTE OUT** is enabled, the channel will output a NoteOn with Velocity 64 when the Gate is turned On, and a NoteOff (velocity 0) when the Gate is turned Off. The MIDI note number which is sent is set by **MIDINOTE OUT**.

If a MIDI CC is enabled for a Gate channel, then the Gate can also be turned On and Off by sending this MIDI CC number to the MP-201 on the selected MIDI channel, regardless of the **GATE SOURCE**. Any MIDI CC value greater than 63 will turn on the Gate if it is Off, and any MIDI CC value 0-63 will turn off the Gate if it is On.

New Channel Modes:

MIDI TO CV

The **MIDI TO CV** Channel Mode takes MIDI Notes as input, and puts out a Pitch Control Voltage which is adjustable between 0.667 Volts per octave and 1.333 Volts per octave. The default is 1.0 Volts per octave; this is set by the CV SCALE parameter.

One certain MIDI note will always produce a CV output of zero Volts; this is called the Root Note and is set by the user, using the **ROOT NOTE=0V** parameter. All other Pitch CV output is calculated relative to this Root Note.

If the MP-201 CV Scale is set to **UNIPOLAR** (all CV outputs are restricted to the range 0V to +5V), then the Root Note is the lowest note that will play; all MIDI notes below this will also cause the CV output to be zero Volts.

If the MP-201 CV Scale is set to **BIPOLAR** (output voltage range -5V to +5V), then the Root Note sits in the middle of the Pitch CV range, and MIDI notes below the Root Note will cause a negative voltage output, down to -5V minimum.

The default Root Note is MIDI Note 48, or C3. You can transpose by semitones the pitch of the CV output relative to the MIDI notes you play, just by changing the Root Note.

PITCH BEND - MIDI TO CV channels can also respond to Pitch Bend messages on the selected MIDI channel, at full 14-bit resolution. You can set Pitch Bend range from 1 to 12 semitones or 24 semitones, or turn Pitch Bend off.

GLIDE MODE - allows for analog-style glide between notes. **OFF** turns off the Glide feature, **ON** causes a glide between all notes all the time, and **LEGATO GLIDE** causes a glide only between overlapping notes, with no glide (instant change in Pitch CV) for disconnected notes. Legato Glide is excellent for live performance and for 303-style step-sequences.

GLIDE RATE - sets how much glide between notes. Range is 0-4095, but actual glide time depends on the Glide Type used.

GLIDE TYPE - has four options: Constant Rate, Constant Time, Log, and Exp. Constant Rate is classic "Moog-Style" glide; in Constant Rate mode the Glide Rate parameter sets how long it takes for the Pitch CV to change by one volt. This rate of change is constant, so as a result it takes longer to glide between two notes that are far apart than it takes to glide between two close-together ones.



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By contrast, in Constant Time mode, any glide between any two notes takes the same amount of time (as set by the **GLIDE RATE** parameter), no matter how far apart the notes are. This means that the actual rate of change (volts per second) is faster for wide intervals and slower for narrow intervals between notes, which creates some interesting effects.

LOG glides start out fast and then slow down as they approach the ending pitch, while **EXP** glides start slow and accelerate as they approach the ending pitch.

Additional notes: **MIDI TO CV** channels are CV output only. There is no MIDI output from a MIDI to CV channel, and it does not output or respond to any MIDI CC numbers. The Channel On/Off footswitch toggles MIDI to CV channels on and off.

When **OFF**, a MIDI to CV channel outputs zero Volts and does not respond to any MIDI notes. Turning off a MIDI to CV channel also clears and resets the channel's note stack, which can be used to clear any stuck notes if they occur.

Note stacks on the MP-201 are used by Gate channels (if Gate Source = MIDI Notes) and by MIDI to CV channels; in both cases you have an eight-note stack which is monophonic, with last-note priority.

NOISE

The **NOISE** Channel Mode provides a digitally-generated Noise source with dynamic performance control. Noise output is now much smoother and more consistent than was possible with the MP-201 v1 firmware. Parameters include the following:

NOISE AMOUNT - sets the amplitude of the Noise signal, while Noise Offset sets the DC voltage about which the Noise signal is centered.

FPEDAL MODE - allows you to control either Noise Amount or Noise Offset from the Foot Pedal. Heel and Toe Value set the Foot Pedal response range as usual.

OFF MODE - determines what the channel output will be when the channel is turned Off:

INITIAL - sets the output to a preset voltage (and/or MIDI value), set by the INITIAL VALUE parameter.

OFFSET - sets the output to the current Noise Offset value when the channel is turned Off (Useful when FPEDAL MODE = Noise Offset), and **CONTINUOUS** allows the noise to continue being noisy (although no longer influenced by the Foot Pedal) when the channel is turned Off.

The **RESOLUTION** parameter determines the digital resolution of the generated noise. The noise is restricted to the number of bits shown, which determines how many discrete values the output can take. 2-bit noise can only take one of four possible values, 3-bit noise can be randomly any of 8 values, n-bit noise can be any of 2 to the n values.

Sonically, there is a big difference between 2-bit and 3-bit noise, some difference between 3 and 4 bits, and almost no audible difference between 4 bits and any higher number of bits. The difference in noise texture at different bit resolutions may be more audible depending on what the Noise is being used to modulate. If you connect the Noise output to a Sample & Hold input (on the Moog Voyager or CP-251, for example), changing the Noise Resolution will determine how many possible voltage values the output of the Sample & Hold can have.



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A tour of the new UTILITIES menu:

Numbers in brackets [] denote top-level Utilities menu items; numbers in parentheses () denote choices within a given Utilities selection. The numbers indicate the order of the items within the menus and sub-menus.

[0] **VERSION NUMBER:** No options here; shows the current firmware release version and build number.

[1] **QUAD OPTIONS:** New options pertaining to the **QUAD** mode of operation.

(1) **DEFAULT MODE** - Sets which Performance Mode to use on power-on; **SINGLE** or **QUAD**.

(2) **QUAD MONO/POLY** - Selects how channel On/Off foot switches behave in Quad Mode. **MONO** = only one channel on at a time. **QUAD MONO** mode is great for controlling multiple effects on a guitar pedal board, switching instantly from one **EXPRESSION** channel to another.

(3) **QUAD DISPLAY – CHANNEL MODES** or **CHANNEL NAMES**.

Select which you want to show on LCD in Quad Mode (if Display Units turned **OFF**).

[2] **MIDI SETUP:**

(1) **MIDI IN** - Select **DIN** only, **USB** only, or both **DIN** and **USB**.

(2) **MIDI OUT** - Select **DIN** only, **USB** only, or both **DIN** and **USB**.

(3) **MERGE USB IN** - Merge to **NONE**, **DIN** Out, **USB** Out, **DIN** and **USB** Out.

(4) **MERGE DIN IN** - Merge to **NONE**, **DIN** Out, **USB** Out, **DIN** and **USB** Out.

(5) **BASE CHANNEL** - **OFF**, **1-16**, **ALL**. Unit will only respond to Program Change and Channel Toggle CC messages on the selected Base Channel.

(6) **PGM CHANGE Tx/Rx** - Control sending and receiving MIDI Program Change messages: **Send & Receive**, **Receive Only**, **Send Only**, or **OFF**.

(7) **MULTI PGM CHANGE** - "**Send All At Once**" sends Program Change messages for all channels of an MP-201 preset at once, and only sends them when the preset is first loaded. "**Send Per Channel**" sends each MP-201 channel's Program Change message any time that channel is toggled from Off to On. In "**Per Channel**" mode, when a preset is first loaded, channels whose InitialState is On send a Program Change.

(8) **CC CHAN TOGGLE** - Midi CC numbers **111**, **112**, **113**, **114**, if received on the MIDI Base Channel, can toggle MP-201 channels On and Off.

This option sets **Momentary** or **Latching** On/Off behavior in response to these CC messages.

(9) **MIDI GOVERNOR:** Slows down the rate of MIDI data output from the MP-201.

Higher numbers mean slower MIDI output.

[3] **CV SCALE:** Set the voltage range of the CV outputs.

UNIPOLAR = 0V to +5V, **BIPOLAR** = -5V to +5V.

[4] **CV SMOOTH:** **ON** or **OFF**.

If **ON**, a fixed analog filter is applied to all CV output, to smooth out changes in voltage.

Now that adjustable **CV LAG** has been added in firmware v2.0,

you may wish to leave **CV SMOOTH** turned **OFF**.

[5] **DISPLAY UNITS:** Options are **OFF**, **VOLTS**, **MIDI**, or **PRECISION**.

Changes how edited values are displayed on the LCD. **OFF** is recommended.



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- [6] **COPY/SWAP:** This menu contains the options to copy & swap presets, and new options to copy/swap channels within the current preset.
- (1) **COPY CHANNEL** - Copy all the settings from any one channel to another within the currently-active preset.
 - (2) **SWAP CHANNELS** - Swap the settings of any two channels within the currently-active preset.
 - (3) **COPY PRESET** - Copies a preset to any new location.
As with Copy Channel, this overwrites the data at the destination location.
 - (4) **SWAP PRESETS** - Pick any two presets in memory and swap which preset is in which location.
- [7] **SEND SYSEX:** All MP-201 Sysex-sending functions have been collected on this new menu.
- (1) **SEND ALL PRESETS** - Send a bank of 100 MP-201 user presets as one SysEx file.
 - (2) **SEND PRESET** - Send the currently-active preset as a 310-byte SysEx file.
 - (3) **SEND BULK DUMP** - Send one large file which contains all 100 User presets and all Global settings.
 - (4) **SEND FACTORY** - Send the 40 Factory presets as a SysEx file.
If you send this file to the MP-201, it will load into the Factory preset memory and not directly to the active user presets.
 - (5) **SEND FIRMWARE** - Send the MP-201 firmware as a SysEx file.
This can be used to update another MP-201 to the current firmware version.
- [8] **RESTORE FACTORY:** Restores all presets and global settings to factory defaults.
- [9] **CALIBRATE FPEDAL:** Calibrate the response of the built-in Foot Pedal control.
Do this if the foot pedal response seems incorrect.



Map of MP-201 v2.0 EDIT menu: parameters are listed per CHANNEL MODE below.

EXPRESSION

HEEL VALUE	(0 - 4095)
TOE VALUE	(0 - 4095)
INITIAL VAL	(0 - 4095)
CV LAG	(OFF, ON)
<i>if "ON" :</i>	
RISE TIME	(0 - 4095)
FALL TIME	(=RISE TIME, 1 - 4095)
CHAN OUTPUT	(CV AND MIDI, CV ONLY, MIDI ONLY)
MIDI CC #	(OFF, 0 - 127)

GATE

GATE SOURCE	(FOOT SWITCH, MIDI NOTES, PEDAL CV)
<i>if "FOOT SWITCH" :</i>	
FS MODE	(MOMENTARY, LATCH)
<i>if "MIDI NOTES" :</i>	
VELO TRIGGER	(OFF, 1 - 127)
TRIGGER MODE	(LEGATO, RETRIGGER)
<i>if "PEDAL CV" :</i>	
THRESHOLD	(0 - 4095)
HEEL VALUE	(0 - 4095)
TOE VALUE	(0 - 4095)
GATE/EG	(GATE, ENVELOPE)
<i>if "ENVELOPE" :</i>	
ENV SHAPE	(LIN, LOG, EXP, COMPLEX)
<i>if "COMPLEX" :</i>	
ATTACK SHAPE	(LIN, LOG, EXP)
DECAY SHAPE	(LIN, LOG, EXP)
REL. SHAPE	(LIN, LOG, EXP)
HOLD TIME	(OFF, 1 - 4095)
ATTACK RATE	(0 - 4095)
DECAY RATE	(0 - 4095)
SUSTAIN LVL	(0 - 4095)
RELEASE RATE	(0 - 4095)
EG LOOPING	(ONE-SHOT, ADR LOOP)
MIDINOTE OUT	(OFF, 0 - 127)
CHAN OUTPUT	(CV AND MIDI, CV ONLY, MIDI ONLY)
MIDI CC #	(OFF, 0 - 127)



LFO

LFO WAVEFORM	(TRIANGLE, SQUARE, SAW DOWN, RAMP UP, S+H)
LFO SYNC	(FREE RUNNING, TAP TEMPO, CH1-4, MIDI CLOCK)
LFO RATE	(0 - 4095 or MIDI Clock Divisions)
LFO AMOUNT	(0 - 4095)
LFO OFFSET	(0 - 4095)
FPEDAL MODE	(RATE, AMOUNT, OFFSET)
HEEL VALUE	(0 - 4095)
TOE VALUE	(0 - 4095)
LFO OFF MODE	(INITIAL, CURRENT, CONTINUOUS)
INITIAL VAL	(0 - 4095)
CV LAG	(OFF, ON)
<i>if "ON":</i>	
RISE TIME	(0 - 4095)
FALL TIME	(=RISE TIME, 1 - 4095)
CHAN OUTPUT	(CV AND MIDI, CV ONLY, MIDI ONLY)
MIDI CC #	(OFF, 0 - 127)

MIDI TO CV

ROOT NOTE=0V	(0 - 127)
CV SCALE	(0.667 – 1.333)
PITCH BEND	(OFF, 1-12 Semitones, 24 Semitones)
GLIDE MODE	(OFF, ON, LEGATO ON)
GLIDE RATE	(0 - 4095)
GLIDE TYPE	(CONST.TIME, LOG, EXP, CONST.RATE)

NOISE

NOISE AMOUNT	(0 - 4095)
NOISE OFFSET	(0 - 4095)
FPEDAL MODE	(NOISE AMOUNT, NOISE OFFSET)
HEEL VALUE	(0 - 4095)
TOE VALUE	(0 - 4095)
OFF MODE	(INITIAL, OFFSET VAL, CONTINUOUS)
INITIAL VAL	(0 - 4095)
RESOLUTION	(3 – 12 Bits)
CHAN OUTPUT	(CV AND MIDI, CV ONLY, MIDI ONLY)
MIDI CC #	(OFF, 0 - 127)



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COMMON PARAMETERS (all channel modes)

CHAN NAME	(8 characters)
INITIALSTATE	(OFF, ON)
CHANNEL MODE	(EXPRESSION, GATE, LFO, MIDI TO CV, NOISE)
MIDI CHANNEL	(OFF, 1-16)
<i>if MIDI Channel not OFF:</i>	
PGM CHANGE#	(OFF, 0 - 127)
BANK CHANGE#	(LSB 0-127, MSB 0-127)



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From the simplicity of the EP-2 Expression Pedal and the modular patching capability of the CP-251 Control Processor, to the unique user interface of the Etherwave Plus and the ultimate flexibility of the MP-201 Multi-Pedal, Moog controllers connect you to new realms of expression.

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