PedalSync™
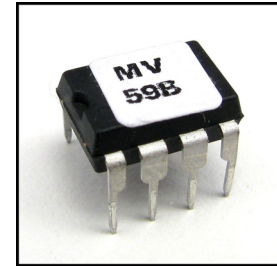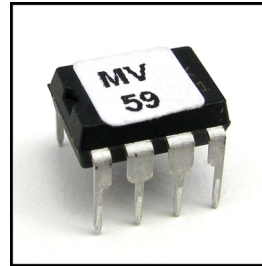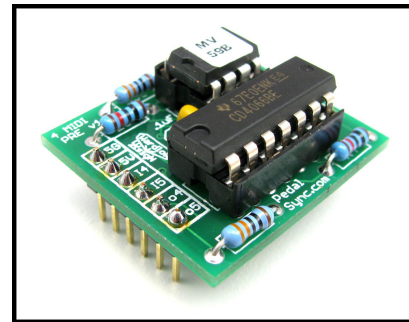
4 Presets chips
MV-59 and MV-59B

and Module

Key Features

- Easy to create stand-alone pedals that can be used traditionally and tested in-store, as well as dual-use devices

- Simple user interface

- Multiple LED display options

- Power-on light show

- Efficiently Designed to ensure Low part count

- Compatible with MIDI designs

- If the device is designed for dual-use (PedalSync *and* Stand-Alone), a custom latching network blocks any other incoming control signal, giving the 4 Presets signal priority.

- Use PedalSync™ trademark on your devices and in advertising

- Thru-Hole or SMT

- CadSoft Eagle footprint available for module

Purpose

The 28-pin PedalSync chips, such as the Tru-Foot™ LFO (MV-55), Four Pots (MV-56), and Pulse Output (MV-60) chips, each separately store 128 presets. Molten Voltage's 4 Presets chips **MV-59** and **MV-59B** can be used to recall programs 1-4.

MV-59 and **MV-59B** can also be used to recall programs 1-4 in any MIDI design that receives Program Change messages on Channel 15.**

** Custom programming to suit your needs is always available. Contact us at info@PedalSync.com for more information.

User Interface

Button
Pressing the momentary switch (Button) sends a single Program Change message. Programs are cycled sequentially each time the button is pressed.

The operation of **MV-59** and **MV-59B** is identical except that:

MV-59

MV-59 sends the first Program Change message for Program 1 on power-up after an initial 2 second delay, allowing other chips in the device to initialize.

As such, the first time the Button is pressed after powering on, Program 2 is sent.

MV-59B

MV-59B does not send and Program Change message on power-up. Instead, the first time the Button is pressed after the initial light show, Program 1 is sent.

Both versions feature a **power-on light show** *which cycles the LEDs through programs 2-4.* MV-59 ends by turning on the Program 1 LED, while MV-59B ends with Program 4's LED, indicating the next program will be number 1.

The exclusive MIDI channel for the PedalSync system is MIDI Channel 15. As such, the four Program Change messages are always sent on that Channel.

Storing Programs

To store a program, users toggle the "Write" switch connected to pin 16 on the compatible PedalSync chips. Those chips then store the current settings at the currently selected program location.

LED(s)

There are three possible display options:

a)   four separate LEDs

As shown in the schematic page 5, four separate LEDs can be connected to the chip, each indicating a separate program selection.

b)   two separate LEDs

As shown in the schematic on page 5, two separate LEDs can be connected to the chip. When neither are lit, program 1 is indicated. When LED1 is lit, program 2 is indicated. When LED2 is lit, program 3 is indicated, and when both are lit, program 4 is indicated.

c)   one bi-color LED

A single bi-color LED (red/green is preferable) can be used in place of the two separate LEDs. When both are lit, the LED takes on an orange glow, making it easy to distinguish between the other states.

Dual-Use Devices

The schematic on page 5 shows how to connect a latching network (Latch Control) which blocks any other incoming control signal, giving the 4 Presets chip signal priority.

The Latch Control prevents the device from receiving conflicting messages from external PedalSync or MIDI devices.

Stand-Alone Devices

If the device is designed as Stand-Alone (*i.e.* no external PedalSync or MIDI signal), ignore the Latch Control circuitry and connect the P/S Out signal on the 4 Presets Chip to the P/S RX input (*pin 21 on the 28-pin PedalSync chips*) on the chip to be controlled.

If using a PedalSync module such as the Tru-Foot LFO, Four Pots, or 9 Switches module in a stand-alone design, connect the P/S Out signal to module Pin I5 via a 330 ohm resistor, while connecting module Pin I4 to +5V.

Design Considerations

When designing dual-use devices using MV-59 and MV-59B, there are a few important considerations:

If an external Program Change message is received by the device, the MV-59(B) LEDs will not indicate the received program value, even if it is program 1-4. The external message will also not alter the cycle of MV-59(B), instead, MV-59(B) will send the value that was pending prior to the receipt of the external Program Change message(s).

If the 4 Presets Button is pressed on a dual-use pedal that is actively receiving incoming PedalSync or MIDI Clock information, it is possible that the Latch Control might block a PedalSync or MIDI Clock value.

Electrical Considerations

Place C1 as close as possible to Pin 1.

If multiple chips are controlled from a single 4 Presets chip, buffer the pin 2 output (e.g. with a 4050 buffer chip) and place a 330 ohm resistor in series with *each* buffer output.

The datasheet for the underlying 12F508 chip can be found here:
http://www.microchip.com/wwwproducts/Devices.aspx?dDocName=en020094

The latch control prevents an external PedalSync or MIDI device from receiving conflicting messages

If no external PedalSync or MIDI jacks are used, ignore the latch control and connect the P/S Out signal to the P/S RX input on the chip to be controlled with a 330 ohm series resistor

If multiple chips are to be controlled, buffer the pin 2 output and place a 330 ohm resistor after each buffer output

2 Types of LED output available - choose one

1) shown above chip

Program 1 = Both Off	
Program 2 = LED1 On	
Program 3 = LED2 On	
Program 4 = Both On	

2) shown below chip

Program 1 = LED1	
Program 2 = LED2	
Program 3 = LED3	
Program 4 = LED4	

Program Select

R4 10k

+5v

LED4
LED1
LED3
LED2

R2 330
R3 330

LED1 RED
LED2 GRN

* can be a 2-color LED

4 Presets
MV-59
MV-59B

LED1
LED2
LED3

8
1
+5v
C1 0.1uF
2
3
5

R1 330
P/S Out >

CTRL CD4066 I/O
CTRL CD4066 VDD VSS I/O

+5v

LATCH CONTROL

CTRL CD4066 I/O
CTRL CD4066 I/O

R5 10k
+5v
+5v

P/S OUT
5-pin DIN

P/S IN
5-pin DIN

Looking from outside - where cord plugs in

All ground connections to digital ground rail

Max. 25mA per output pin, 75 mA total for all output pins

PedalSync

4 Presets (MV-59 and MV-59B)

MoltenVoltage.com

DRAFT 0.6
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4 MIDI PRE Module

The 4 MIDI PRE module is designed to allow the following connections:

Pin	Connection
5G	5-volt Digital Ground connection (*e.g.* 5G connection from the PedalSync Tru-Foot LFO or Four Pots module)
5V	Connection for regulated 5-volt power input (*e.g.* 5V connection from the PedalSync Tru-Foot LFO or Four Pots module)
I4	Pin 4 of MIDI Input
I5	Pin 5 of MIDI Input
o4	Pin 4 of MIDI Output
o5	Pin 5 of MIDI Output
6A	Connection to Pin 6 via 330 ohm resistor
6B	Connection to Pin 6 (no resistor)
7*	Connection to Pin 7 via 330 ohm resistor
3*	Connection to Pin 3 (no resistor)
5G	5-volt Digital Ground connection (connect to other end of momentary switch and to LED grounds if using the two LED or one bi-color LED option shown in the schematic, above)
SW	Momentary pushbutton switch input

Tip: Use 6A and 7 for a bi-color LED

4 MIDI PRE Module PCB:
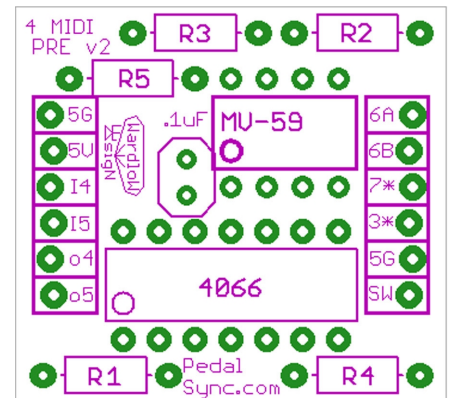
The 4 MIDI PRE module has the following components:

PCB	Component
R1	330 ohm resistor **(orange, orange, black, black, brown)** for latching network
R2, R3	330 ohm resistors for LEDs
R4, R5	10K resistors **(brown, black, black, red, brown)** for Switch and latching network
.1uF	Ceramic 0.1uF non-polarized capacitors with .1" lead spacing
MV-59	PedalSync MV-59 or MV-59B, 4 Presets chip (*in socket*)
4066	CD4066 CMOS Quad Analog Bilateral Switch (*in socket*)

Module Dimensions

Circuit board: 1.2 x 1.1"

Header pins are spaced 0.1" and the two header strips are 1.0" apart

A complete set of CadSoft Eagle footprints for PedalSync modules is available for download at:
www.PedalSync.com

Specifications

Supply Voltage ~ 4.5-5.5 Volts DC - filtered and regulated

Maximum Output Current sunk or sourced by each output pin = 25mA

Maximum Output Current sunk or sourced by all output pins = 125mA

Follow this link to find the datasheet for the underlying Microchip 12F508 chip.
http://www.microchip.com/wwwproducts/Devices.aspx?dDocName=en020094

Custom programming to suit your needs is always available. Contact info@PedalSync.com for more information.

Support
info@PedalSync.com

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