



OWNER'S MANUAL

Congratulations on purchasing **CV-Sync™** by *Molten Voltage*

CV-SYNC™ is a programmable PedalBoard *Control-Voltage Synchronizer* that connects the Control Voltage Input of effects, modular synths, and vintage CV-based gear, then switches in sync with the incoming MIDI Clock at one of nine (9) musical ratios.

Key Features

- Synchronize your Vintage and Modular gear to MIDI Clock
- Two (2) Simultaneous CV Outputs (0-5 volts DC)
- Ratio controls multiply or divide the outputs against the incoming clock into one of nine (9) musical ratios
- Stores and recalls distinct Output Ratio for each output
- Simple to program - toggle a switch!
- Output polarity can be inverted as needed
- Compact design assists discrete modular PedalBoard construction
- Solid, Professional-Grade construction, including Riveted Steel MIDI Jacks
- Molten Voltage technology allows remote, synchronized self-programming
- Robust, 128 program storage



CONNECTING

Plug in a *separate or isolated* 9 volt, 2.1mm, 100mA minimum, **tip negative** DC Power supply into the DC9V jack (B). **Never power CV-SYNC using a "daisy chained" power supply that is also connected to audio effects.**



- (A) MIDI IN Jack
- (B) DC Power Jack
- (C) PGM Switch
- (D) STATUS LED
- (E) RATIO 2 Control
- (F) RATIO 1 Control
- (G) CV 2 Output
- (H) CV 1 Output

MIDI Input

Connect a standard 5-pin MIDI cable to the MIDI IN Jack (A).

MIDI Clock

CV-SYNC pulses the CV 1 and 2 Outputs relative to the incoming MIDI Clock.

Maximum MIDI Clock interval = 2.5 seconds (24 bpm)

Minimum MIDI Clock interval = 0.25 seconds (240 bpm)

Output only occurs while MIDI Clock data is being received.

MIDI Start (FA) commands instantly reset both outputs.

Program Change Messages

CV-SYNC stores the Output Ratios associated with each of 128 Programs.

Programs are recalled upon receipt of MIDI Program Change messages on CV-SYNC's MIDI Channel (default is 15). *See below for information on Selecting MIDI Channel.*

Upon receipt of a Program Change message, the Output Ratios for that Program are recalled. If MIDI Clock is being sent, any new clock speed is used.

As long as MIDI Clock is flowing, the outputs remain consistent and do not reset upon receipt of a program change. To reset the outputs, a MIDI Start command is required.

Note: CV-SYNC also responds to Program Change messages sent using the "running status" data format.

CV Outputs



Using standard 1/4" mono cables, connect CV-SYNC's CV 1 (H) and CV 2 (G) Outputs to the CV (Control Voltage) Inputs of the devices to be controlled.

The CV Outputs will pulse from 0-5 volts DC in sync with the incoming MIDI Clock.

The default is both CV Outputs using normally low pulses. The outputs can also be configured so that the switching is normally high (inverted), or one of each. *See below for instructions of changing the Output Mode.*

Limitations of Control Voltage Inputs

Effects, synths, and other devices have varying limits on the minimum and maximum allowable pulsing speeds. CV-SYNC can likely exceed those limits at its maximum and minimum values, creating unpredictable results.

Other devices may have a noticeable time lag before adjusting to the switched tempo, depending on how many taps are required to change the tempo.

Please refer to the owner's manuals for the controlled devices for more information.

Ratio Controls

The RATIO 1 (F) and RATIO 2 (E) Controls multiply or divide the Output Pulsing speeds relative to the incoming MIDI Clock.

The Output Ratios are based on nine (9) musical subdivisions:

- sixteenth note (1:4 ratio)
- eighth note triplet (1:3 ratio)
- eighth note (1:2 ratio)
- quarter note triplet (2:3 ratio)
- quarter note (tap speed)
- half note triplet (4:3 ratio)
- half note (2:1 ratio)
- whole note (4:1 ratio)
- two whole notes (8:1 ratio)

As a result, synchronized devices can operate at different yet complimentary rates.

The default Output Ratio is quarter note, which corresponds to the knob pointing to the top of the pedal. Sixteenth note is full left, while two whole notes is full right.

Note: Ratio changes affect only the current Program and are not stored unless the Program is saved, as described in the next section.

Note: CV-SYNC reads the position of the Ratio Controls on power up.

Note: Whenever the ratio controls are not stable (i.e. when they are moving or have recently moved), the STATUS LED will turn off until they become stable again. Each control will stabilize after approximately three (3) seconds of no motion.

Program Storage

CV-SYNC stores the distinct Output Ratios for each of 128 programs.

Programs are stored by toggling the PGM Switch down then up again. The STATUS LED will flash to indicate the program was successfully stored.

Programs can also be stored upon a self-programming command from the Molten Voltage MASTER CONTROL or Molten Voltage TEMPODE MIDI Clock Injector.

Selecting Output Mode and MIDI Channel

CV-SYNC offers 3 different Output Modes and can be set to respond to MIDI Program Change messages on MIDI Channel 1 or 15.

Note: MIDI Clock is not channel-specific. As such CV-SYNC will always respond to an incoming MIDI Clock

To change the Output Mode and MIDI Channel, have the PGM switch in the "up" position when powering on. Switch the PGM switch down within 2 seconds. The STATUS LED will blink in a pattern, indicating the current Output Mode and MIDI Channel.

Output Mode	MIDI Channel	LED Blinking Pattern
Both Normally Low	1	LED off with 1 pulse on
Both Normally Low (DEFAULT)	15	LED on with 1 pulse off
CV 1 Low, CV 2 Inverted	1	LED off with 2 pulses on
CV 1 Low, CV 2 Inverted	15	LED on with 2 pulses off
Both Normally High (Inverted)	1	LED off with 3 pulses on
Both Normally High (Inverted)	15	LED on with 3 pulses off

Turn the Ratio 1 Control (F) to select between the 3 Output Modes:

Full Left = both Normally Low pulsing

Center = 1 of each (CV 1 Normally Low, CV 2 inverted)

Full Right = both inverted (*normally high pulsing*)

Review the manual for the device to be controlled to determine the correct output mode.

Turn the RATIO 2 Control (E) to select between MIDI Channel 1 and 15.

Full Left = MIDI Channel 1

Full Right = MIDI Channel 15

Switch the PGM switch back up to store the Output Mode and MIDI Channel.

Note: Changing Output Mode and MIDI Channel does not overwrite any stored programs.

Factory Preset Values

- 1:1 (Quarter Note) Ratio
- Both Normally Low Pulsing Output Mode
- MIDI Channel 15

Note: the primary MIDI channel for the Molten Voltage system is MIDI Channel 15.

MIDI Phantom Power

CV-SYNC does not use MIDI Phantom Power.

MIDI IMPLEMENTATION CHART

Function	Recognized	Comment
Note On	X	
Note Off	X	
Aftertouch	X	
Control Change	X	
Program Change	O	Only Program Changes on Channels 1 or 15 (depending on selection) recognized.
Channel Pressure	X	
Pitch Bend	X	
System Common	X	
System Exclusive	O	Responds to Molten Voltage self-program commands.
System Realtime	O	Only MIDI Start and Clock.

O = YES, X = NO

TROUBLESHOOTING

Problem	Solution
CV-SYNC will not turn on.	Plug in 9 volt DC, 2,1mm Tip <u>Negative</u> Power Supply.
Clicking or Noise	Use a <i>separate</i> or <i>isolated</i> Power Supply for CV-SYNC
CV-SYNC is not receiving MIDI Clock	Make sure your other MIDI device is configured to send MIDI Clock. Consult the User's Guide for that device. If it cannot send MIDI Clock, consider the Molten Voltage devices MASTER CONTROL or TEMPODE.
CV-SYNC not receiving MIDI Program Change messages	Set your MIDI device to send MIDI Program Change messages on the same MIDI Channel as CV-SYNC. (<i>see above</i> regarding Selecting MIDI Channel).
Connected Device is not synchronized	Determine switching polarity required by referring to device's owner's manual, and adjust CV-SYNC accordingly. Make sure MIDI Clock and Ratio do not exceed the input limits of the device.

General Guidelines

- Keep MIDI cables as short as possible. Long cables cause errors. If you need more length, consider using a MIDI repeater.
- If you are daisy chaining MIDI devices, the total MIDI cable length must be considered if any MIDI devices do not amplify the data signal.

Support

questions@MoltenVoltage.com

Related Products

- MASTER CONTROL (MV-58 and MV-58B)
- TEMPODE, the MIDI Clock Injector
- MIDI Splitty - MIDI Pedalboard Repeater

Many more available soon!

Warranty

Molten Voltage is proud of its products and warrants this unit for a period of two (2) years from the date of purchase to be free from defects in materials and workmanship under normal use and service, as long as the unit is used with an approved power supply, and consistent with these instructions.

Contact Service@MoltenVoltage.com regarding repairs. Any user repair attempts void the warranty. **PROOF OF PURCHASE IS REQUIRED FOR WARRANTY REPAIRS.**



Molten Voltage MIDI PedalBoard Devices

Sturdy
Scalable
Simple™

streamline your sound™

DISCLAIMER

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. **MOLTEN VOLTAGE MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE.** Molten Voltage disclaims all liability arising from this information and its use. No licenses are conveyed, implicitly or otherwise, under any Molten Voltage intellectual property rights.

SIMI, CV-Sync, MASTER CONTROL, MIDI Splitty, TEMPODE, NODE, Tru-Foot, Molten Voltage, Visionary Effects, ReMute, "Sturdy Scalable Simple", "streamline your sound", "Design simple Design sublime", and "the future just showed up" are all trademarks of Molten Voltage. Legal@MoltenVoltage.com