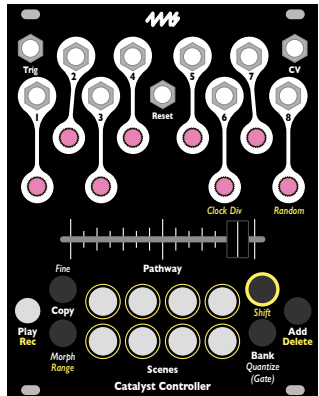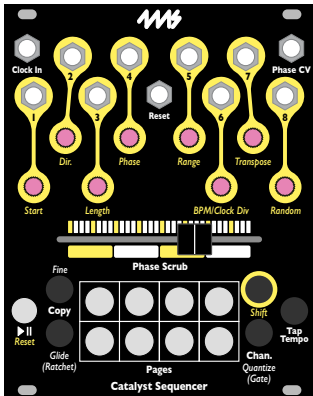# Firmware Update v1.2
Catalyst Sequencer
Catalyst Controller

4ms Company
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Sequencer Channel Mutes

You can mute and unmute individual sequencer channels, while a sequence is playing. First go the *Live View* by holding the **Chan.** button and tapping the **Page** button for the current channel (that is, tap whichever Page button is lit up).

In this view, the real-time output of each channel is visible on the encoders. Notice that all eight **Page** buttons are lit up. This means all channels are unmuted. To mute a channel, tap its **Page** button. The **Page** button will turn off, and the channel's encoder will turn dim grey. The channel's output jack will output zero volts (0V).

To unmute a channel, tap its **Page** button again. The **Page** button light will turn on, the channel encoder will display the output, and the output jack will output the sequence steps again.

You can exit Live View at any time by tapping the **Chan**. button.

The muted/unmuted status of each channel is saved when you save a slot (see Catalyst Sequencer User Manual).

External Clock Modes

There are now two different modes for using an external clock patched into the **Clock In** jack: *Synced* and *DINSYNC.* To change modes, first make sure the **Clock In** jack is patched. Next, hold down **Shift** and **Tap Tempo**. Turn the **BPM/ClockDiv** encoder to select the mode:

   Grey/white: *Synced* mode (default)
   Orange: *DINSYNC* mode

The selected mode will be saved when you save a slot.

Note that these new modes have no effect on functionality unless you have a cable patched into the **Clock In** jack.

Synced External Clock Mode
This is the default mode.

In v1.0, if you were using an external clock and the clock stopped, the sequence would continue running using the internal clock.

In v1.2, this has changed: whenever a cable is patched into the **Clock In** jack, the sequence will only advance when it receives clock pulses on the **Clock In** jack. If the external clock stops, the sequence will stop advancing. To resume the sequence, either resume the external clock, or unpatch the **Clock In** jack to use the internal clock.

Note that while an external clock is patched into the **Clock In**, you can still pause and continue the sequence using the **Play** button (this is not changed).

The **Phase CV** jack and **Crossfader** are not effected by this: they will still scrub through the sequence just like they did in previous firmware.

The **Reset** jack also behaves the same: a trigger on this jack will jump back to the first step.

DINSYNC External Clock Mode

This mode is almost identical to SYNC mode, except that the **Reset** jack behaves differently. This mode uses the Reset jack to emulate the START/STOP signal on classic DINSYNC devices. To fully emulate the 24ppq clock of some DINSYNC devices, you can optionally set a clock divider of 24 (see *Catalyst Sequencer User Manual v1.0* page 18).

When the signal on the **Reset** jack goes high, the sequence will begin playing. If it already is playing (because you pressed the **Play** button), then nothing happens when **Reset** goes high.

When the gate on the **Reset** jack falls low, the sequence stops and resets to the first step. If the sequence is already stopped (because you pressed **Play** while it was playing), then it simply resets to the first step.

Everything else behaves the same in *DINSYNC* mode as it does in *Synced* mode: the **Play** button still pauses or continues the sequence and **Phase CV** and the **Crossfader** will scrub the sequence.

Other Changes

Faster Saving
For the Sequencer, you now only have to hold down **Chan + Glide**
(Sequencer) for about a second for the slot selection to display.
Tapping a **Page** button will load that slot, the same as it did in
previous versions. To save a slot, you only have to hold down the
Page button for about a second. All eight page lights will turn on
when it's time to release the **Page** button.
If a sequence is playing, it will continue playing while you save
(previously it would be stopped). There will be a momentary freeze in
the sequence as it saves

For the Controller, you only have to hold down **Bank + Morph**
(Controller) for less than a second to save.

Tighter Timing
Gate outputs in Sequencer mode now have less jitter. Also, very
short gate pulses with Ratcheting at very fast tempos will no longer
be dropped. Tempos up to 3600BPM with 4x ratchet pulses and 1ms
pulse width gates will be play reliably with no dropped pulses. Jitter
is under 500µs in worst-case situations, and typically under 100µs.