

ReFlex LiveLoop

FLASH-8 USER MANUAL

- I. Installing your Flash-8 Expansion Board [pg. 2](#)
 - A. PSU Ribbon Change [pg. 2](#)
 - B. MIDI Jack [pg. 2](#)
 - C. Mounting The Board [pg. 3](#)
 - D. Firmware Updating Your Reflex Flash-8 [pg. 3](#)
- II. Sample Slots: Saving, Loading, & Erasing Sessions [pg. 4](#)
- III. MIDI Functions [pg. 5](#)
 - A. Channel Slot 1 Universal Notes [pg. 5](#)
 - B. Channel Slot 2 Live Record/Play Notes [pg. 7](#)
 - C. Channel Slot 3 Slice Play Notes Exclusive [pg. 8](#)
 - D. Channel Slot 4 Rate Offset Notes [pg. 8](#)
 - E. Special MIDI Notes [pg. 8](#)
 - F. Pitch Wheel [pg. 9](#)
 - G. 1-2-3-4 MIDI CC's [pg. 9](#)
 - RPN MIDI CC's Info [pg. 9](#)
 - MIDI CC Chart [pg.10](#)
 - H. Customizing CC's and MIDI Channel Slots [pg.12](#)
 - I. Special MIDI Controls & Commands [pg.14](#)
- IV. Tips, [Diagrams](#), [Q & A](#), MIDI SysEx [pg.15](#)

I. Installing your Flash-8 Expansion Board

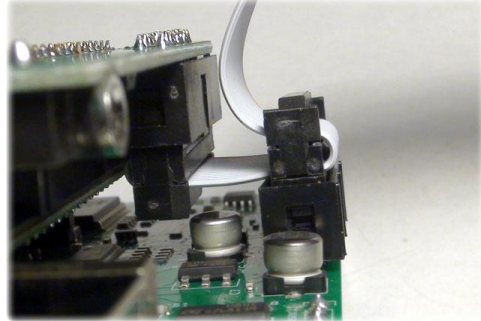
Congrats on acquiring the Flash-8 expansion board for the Reflex LiveLoop!
Once installed, you will be able to save up to 8 entire sessions, and recall them at any time, still intact and doing exactly what was in progress at the time of the Save.
This includes Echoing, Layer playing, R/P loop playing, Slices or PlayFX playing, or even a SGS (Slice Groove Sequencer) cycle in progress, making this a true "snap-shot" capture.
- In addition to Flash, you can now control the Reflex via a large MIDI CC/Note set!
Ready to install the board ?

A. PSU Ribbon Change

The existing PSU ribbon you received with your Reflex LiveLoop needs to be replaced with a new "dual ender".

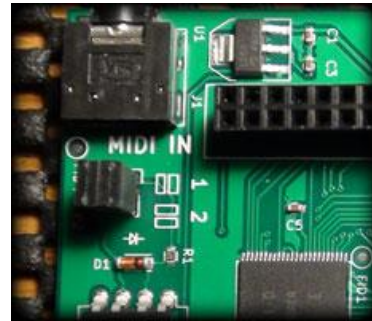
This special PSU ribbon has two plugs on one end and will be installed as shown in this image.

On plug is inverted, but both conform to "standards" of PSU ribbon and alignment slot. The end-most plug is for the new Flash-8, while the inner is for the Reflex. If you plan on "hot-swapping" the Flash-8 ever, it may be better to use 2 single PSU ribbons for that time as it's pretty tight.

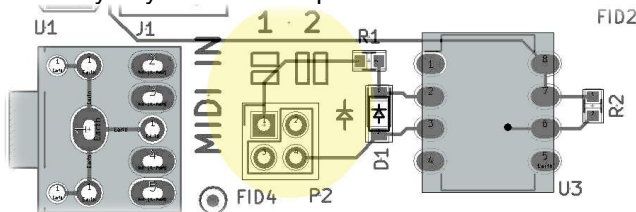


B. MIDI Jack

The MIDI jack accepts a 3.5mm stereo plug for MIDI. You can choose to buy a patch cord to DIN-5 from the UK (MIDI only, not the audio style as these won't work!) or purchase one from us (which would have been suggested) for \$5 along with the Flash-8.



The 2 Jumpers can reverse the polarity for some MIDI patch cords by pairing horizontally or vertically. If you ordered a patch cord from us this will be set to the default "1".



Both jumpers must bridge as one is for MIDI hot and the other one for signal. If you wish to DIY a patch to a panel jack, the two pins with visible traces must be used, but use a 4 pin header for strength.

C. Mounting The Board

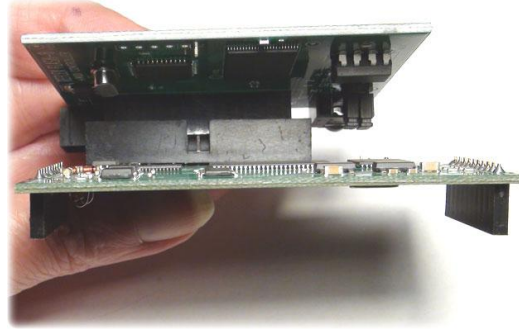
(1)

Remove the small Digital board from the Reflex LiveLoop by wiggling left & right. Be careful not to bend the pins. ***** Remove the little jumper (if present) from inside the 30 pin header.**

(2)

Align the Flash-8 over the 30-pin Header and lightly seat it, making sure the PSU header for the Reflex's 16 pin box header appears aligned.

It's hard to see in the photo, but it should be centered, so visually check it before forcing the plug in.



(3)

Insert the dual PSU ribbon's end plug into the box header of the Flash-8 board (not shown)

(4)

Plug the small digital Board back on to the Reflex mother board. Be certain that both arrows are visible, and the inter-board connector pins are aligned on both ends.

This is very important as even though misalignments have been tested, bad things happen when pins are not where they are supposed to be!

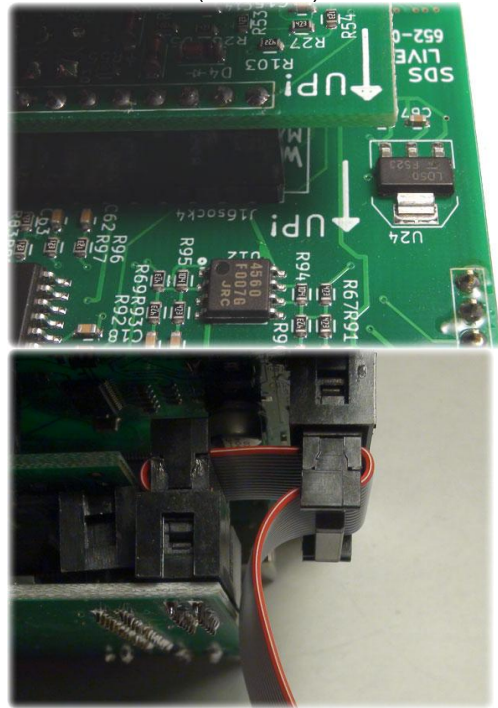
(5)

Plug the remaining midpoint header plug into the Reflex PSU box header.

The installation should appear the same as in this image (and the PSU ribbon image on the last page)

Before applying power, give it the once-over check to make sure everything is aligned nicely, then fire everything up.

***Do not stuff foam between these boards!
The Reflex digital board needs some air circulation.**



D. Firmware Updating Your Reflex Flash-8

Firmware Updates:

The Flash-8 Expansion ships with V1.00, but requires Reflex upgrade V.2.00 so the Reflex firmware needs to be updated. Attach the Flash-8 board as described above.

See <http://www.freshnelly.com/reflex/reflex.htm> to get the firmware V.2.00 (or newer) and update the Reflex to that. You're done! Now you can load the demo in Slot #8!

For any (unlikely) future updates to the Flash-8 board, follow this procedure:

- 1) Download the update (could be .ino + core + flash-8, or just .ino + Flash-8)
 - 2) Load the firmware (.ino) into the Reflex as described in the Reflex update help .pdf
 - 3) Once update is finished, press and hold EQ button to enter Flash load/save mode
 - 4) Turn Rate knob as if you are going to select Slot # 1 (fully left, CCW)
 - 5) Tap the PSEL button to begin Flash-8 update. LED circle will cycle once over 2-3 seconds.
- The new update and your Flash-8 is ready to use!

*Note that Reflex Versions before V.2.00 will not run the Flash-8, but rather will ignore it.

**If you purchased you Reflex with the Flash-8 installed, then you won't require this update.

It is however a good idea to check www.freshnelly.com/reflex/reflex.htm occasionally for updates.

II. Sample Slots: Saving, Loading, & Erasing Sessions

The main purpose of the Reflex Flash-8 Expansion is to save & load sample sessions. The entire memory in the Reflex is loaded and saved to a non-volatile Flash ROM, allowing recall of previous sessions, along with settings data, Slices, etc. Think of it as resuming a session as Slices can be added to loaded Slices, and PlayFX (depending on the new knob positions) will be playing the same sample that was captured before you saved.

As a safety feature, no Slot that already has a session can be written over. It must be erased first to be an "open" Slot.

Here's how to enter the Flash-8 mode and Save a session:



- 1) Press and Hold the EQ button until the LED circle flashes.
- 2) Select a Slot to Save to using the Rate knob. The LED's that are flashing (if any) already have a session in them. If this is a first time, none should be flashing.
- 3) Within 10 seconds of moving the knob, you must tap the REC button to Save. The LED Circle will chase, then freeze for a moment, then return to normal.

At this point you have 1 new Slot saved. You could power down and then power back up, or just load the session back in (even though it's already still in the present sample memory) Here's how to enter the Flash-8 mode and Load a session:



- 1) Press and Hold the EQ button until the LED circle flashes.
- 2) Select a Slot to Load using the Rate knob. The LED's that are flashing already have a session in them. If none are flashing, then there's nothing to load. See above!
- 3) Within 10 seconds of moving the knob, you must tap the PLAY button to Load. The LED Circle will chase, then freeze for a moment, then return to normal.
* Select Slot # 8 and load the little demo I have prepared!

Erasing a Slot is the same method, except the SLICE button is used to erase, which makes sense as white is blanc in French or Spanish, meaning "blank" in English. Compris? Here's how to enter the Flash-8 mode and Erase a slot:



- 1) Press and Hold the EQ button until the LED circle flashes.
- 2) Select a Slot to Erase using the Rate knob. The LED's that are flashing have a session in that slot. If none are flashing, then there's nothing to erase
- 3) Within 10 seconds of moving the knob, you must HOLD the SLICE button for longer than 1 second (RGB LED goes bright white) to Erase. This is a security feature. The LED Circle will also flash for a moment, then return to normal.

-Accidents-

While there is no undo if you erase a slot, if you accidentally enter into Flash-8 mode, just tap the black EQ button you've just held to exit back out.

III. MIDI Functions

As a bonus, the Flash-8 Expansion board has a built-in MIDI input jack. The jack is positioned under the board but accessible. You will need an adapter to connect to a standard 5-pin DIN socket. These are available online at various suppliers, but be careful not to get an audio patch. These are wired completely wrong. We are now supplying them for \$5.

The patch must have the ground on the outer collar (like all things modular) and the signals on the tip and center collar. The jumpers (J2) on the board are turned 90 degrees to configure for either polarity. So if it doesn't work one way, it will work the other!

The MIDI feature allows more control of the Reflex LiveLoop than from the panel, and adds compatibility for DAW's, MIDI Sequencers, MIDI keyboards, and MIDI controllers. For instance, any MIDI keyboard/instrument can be made to not only trigger a PlayFX, but set it's pitch via 1V/octave - like control, regardless of the panel settings, so in affect becomes a sample synth.

There is also a Live Record and Play (keyboard) control where 10 black notes record, and the adjacent white notes to their left play the recording, and other notes shift the pitch. These 10 will also play as Slices, and are added to the "Slice-List".

Finally, a multitude of MIDI controls allow "take-over" of the panel controls, as would CV's and triggers. * See <http://www.freshnelly.com/reflex/flash8.htm> for lots of MIDlstuff !

The following Sections cover the 4 channel slots in respect to what the MIDI Notes do, then the MIDI control changers, or CC's, pitch wheel, and finally some special MIDI controls. The Factory setting for Channels Slots is 1, 2, 3, and 4 respectively.

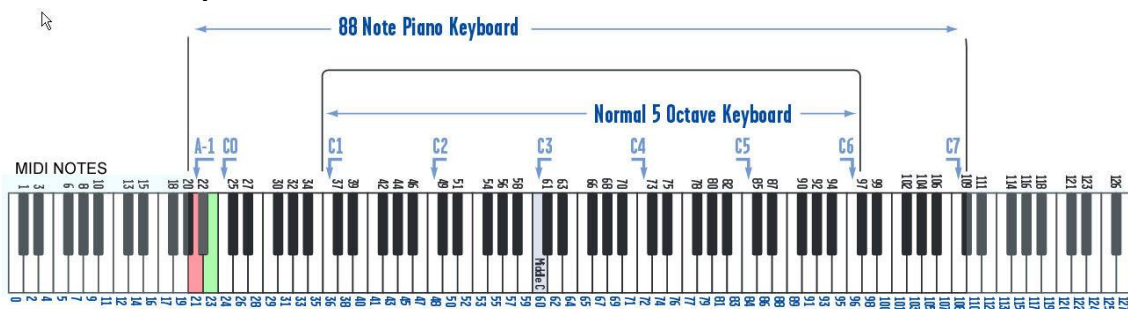
***Note: All Note Values are MIDI NOTE+OCTAVE & NUMBERS, not piano designations!
To translate to piano notes, subtract 2 octaves, i.e. C1 becomes C-1**

A. Channel Slot 1 Universal Notes

Each MIDI channel (assignable), slot 1 through 4, has a different and unique function. MIDI Channel 1 is the most flexible as it will start a PlayFX capture from an RP sample playing or echoing, or play a Slice if SLICE SEL is on, or simply change the pitch of a playing Slice when SLICE SEL is off.

Pitch (Rate) and MIDI Notes:

The MIDI Notes enable the playing of a PlayFX or a Slice over the entire MIDI keyboard note range as with the Rate CV input set to 1V/Octave, but centered at middle C5 MIDI (60). At middle C, the sample rate a.k.a. pitch will be as at center on the Rate knob. Because the MIDI notes are treated as a CV by the Reflex, the Rate knob can still offset this.



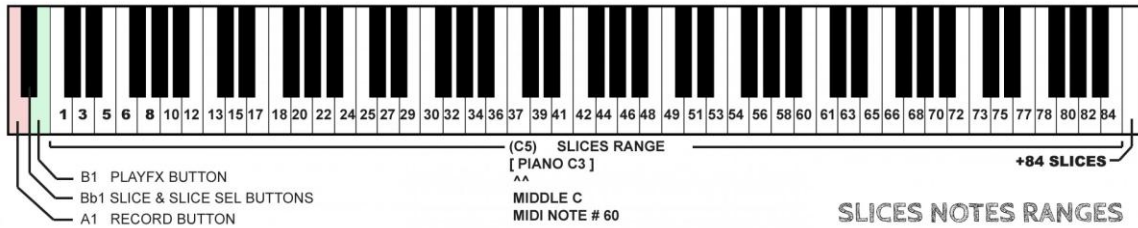
. This means the median range is 3 octaves down and 4 octaves up (Rate knob centered), on a full sized keyboard. The Rate knob can of course transpose this range up or down.

SLICE SEL off:

When SLICE SEL is off, the note range will control the Rate of sample or present Slice playing. The Slice will be re-triggered. PlayFX, if active will also re-trigger (see below)

SLICE SEL on:

When SLICE SEL is on (Green LED over Slice button) MIDI notes will play Slices starting at MIDI C2 progressing to B8. This gives direct access to 84 Slices. The very top note on a piano size keyboard is MIDI C9, which has been set to add a second 84 Slices when held! This gives a total range of 168 Slices and quick toggling between the lower bank and the upper. If your keyboard is < 88 keys, then you'll have to transpose it down, or play Slices after a "roll" (12 slices will roll every octaves, 24 every 2 octaves etc.)



PlayFX Enabled:

MIDI Note B1 captures a PlayFX from the RP Sample or a Slice Playing as does the PlayFX button. Once PlayFX is active:

- RP Sample Captured: all notes played will re-trigger PlayFX and shift the Rate as notes
- Slice+SLICE SEL off: all notes played will act as a trigger on PlayFX, shift the Rate as notes
- Slice+SLICE SEL on: all notes played will select Slices and apply PlayFX to them

PlayFX T/F/G:

- If the PlayFX T/F/G setting is TRIG, then Note-on's will just re-trigger the PlayFX as would a trigger, ignoring the Note-off's.
- If set to GATE, then a note off (release) will exit PlayFX back to the R/P sample playing/echoing, or to the Slice it captured from.
- If the Slice is a 1-Shot, it will play through if the MIDI Note is tapped (short), but if held at all, will exit on the note off (release), this is similar action to a "piano like" synth pedal-less Sostenuato.

Special "Notes":

Some notes are outside of the keyboard range (without transposing) and are useful in an automated MIDI sequence from a DAW or good MIDI Sequencer HW. These notes include SLICE (make slice) and TRIGGER OUT (sends trigger to be used by other modules). See 1,2,3,4 MIDI CC's in section (F).

Special Keyboard Notes:

The lowest 3 keys (MIDI A1, Bb1, and B1) are control keys to change the Reflex without touching the panel. These Notes also allow a MIDI Sequencer to take over main panel functions! They closely mirror the buttons on the Reflex as follows:

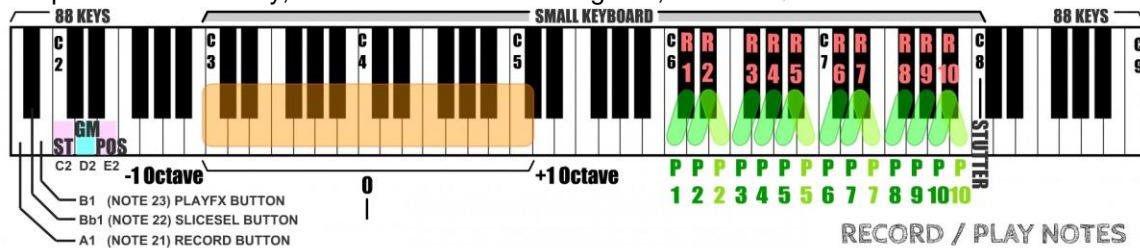
NOTE A1	NOTE Bb1 (A#1)	NOTE B1
(REC)	(SLICE)	(PLAY)
Works exactly as Record button does. Toggle R/P Sample Record & Play, Echo & Infinite Echo, Layers. Hold 1 sec to STOP.	Same as SLICE SEL Button: Tap to toggle between Slice Play and Rate control. Chan.1 will follow this, see below	<Default with RP Sample> Tap to Start/Restart PlayFX (T/F/G Gate = Exit on Release) Hold 1 sec. to EXIT PlayFX

Tips:

- *Slice Rate Change: A Slice can be played, then by toggling SLICE SEL (Note Bb1) it's pitch can be shifted around from C5 up or down. The Pitch Wheel can also be used independently. MIDI Channel Slot 4 can be used to shift rate also, see sect. D. below.
- *PlayFX Gate: If PlayFX is active + T/F/G is set to GATE, PlayFX will capture from RP sample then PlayFX will exit and reset on every MIDI Note release, just like the PLAY panel jack.
- *PlayFX (Trigger mode) with LOOP off will play the same PlayFX as 1-shot "notes"
- *During Slice Play, the PLAY Note (B1) must be used to start a PlayFX, as with button.

B. Channel Slot 2 Live Record/Play Notes

MIDI Channel 2 is completely different than Channel 1. It is designed as a "DJ-like live embellishment controller" that captures up to 10 samples that can be instantly recalled by playing their adjacent notes. These notes are also velocity sensitive so samples can be brought into a composition less starkly, then leave with as much grace, if desired.



The Black Notes marked with Red lettering are to record the samples 1-10, while the Greens and Yellows play the samples. The Yellowish keys are just a duplicate of the key to its left so there are no blank keys. Stutter on/off is at C8 (MIDI 96)

Record Samples:

The record keys (blacks) must be held as long as you want the recording to last. As these samples are treated internally as Slices, switching to a MIDI Channel that plays Slices (1 or 3) will recall all recordings in the order they were created. This means if you start a new recording over black key "R4" and there was already a recording there, the original recording will remain, but won't be accessible from Channel 2 keys. These "Slices" will be appended on to any existing Slices, and won't clear the Slices, so if you want a "clean slate" it's best to delete all Slices before hand (Hold SLICE button >3 seconds, or Bb0>3 seconds)

Play Samples:

The Play keys will Start the recorded sample playing. Similar to a piano, if the key is tapped, the sample will continue until it's end (like a 1-Shot Slice), but if held will stop upon release of the key. If held for longer than the sample that was recorded, it will loop.

If another key is played while the other is still down, then the new key's sample will override the old. This can be useful for continuing a sample looping without a break, but still having control of re-starting it. Sample play won't stop as long as there's a key down.

Pitch Samples:

The lower part of the keyboard (orange box) gives +/- 1 octave range instantly, without re-playing the sample (slice). This use useful for "playing down" a sample without affecting it's course. **Pitch Wheel is independent of this so won't "take-over"*

Tip: If PlayFX G-Move is adjusted to a tempo, these pitch notes won't change the tempo.

Special Channel Slot #2 Keyboard Keys:

On the far left there are the standard 3 control keys that match the colored buttons on the Reflex as on all channels (mostly to add PlayFX on this channel), but there are 3 keys that can switch the PlayFX mode. This is useful if your keyboard/controller/sequencer can adjust the PlayFX knobs settings. With only a keyboard, you are limited to whatever setting is on the Reflex PlayFX knobs so is somewhat redundant.

So, ST=C2, GM=D2, POS=E2. These notes simply change the PlayFX to be used (same as CC) immediately active.

* Note C8 will toggle Stutter Mode on/off (at it's last setting or random) adding a sonic boom!

Velocity:

Velocity is a "touchy" issue with many (excuse the pun!) so the Velocity "curve" for sample play is very steep, i.e. to make a note lighter, it needs to be intentionally tapped lightly. A note velocity of 64 (half) or more will be considered full velocity (for DAW users)

Note Designations:

As already mentioned, some DAW software's and even hardware won't give you the correct MIDI number/note (usually C2 would show as C0, piano) so just subtract 24 for note numbers.

C. Channel Slot 3 Slice Play Notes Exclusive

Notes played on MIDI Channel 3 will always be assigned to Slice Selection/Play. If you are using a multi-tier keyboard, or a sequencer/DAW, then this a way to have direct control of Slices and their Pitch (Rate) simultaneously by using Channel 4 for the Pitch/Rate changes.

Slice#1 = MIDI note 24,(C2) up to note 107 (B8). Holding note C9 will access another 84 Slices.

* If PlayFX is active, then all Slices will have PlayFX applied as would from the panel inputs.

D. Channel Slot 4 Rate Offset Notes

MIDI Channel 4's function is perhaps the simplest of all. Notes on this channel solely change the Pitch/Rate of whatever sample is playing, without triggering anything. This is regardless of whether it is a Slice, RP sample playing, Echo/Delay, PlayFX, or even initially recording.

This makes controlling the new Live Pitch Shift feature of the Reflex easy! If recording only, then the recording will be altered inversely. i.e. the lower the note the higher it plays.

* Keep in mind while recording, the Rate won't pass above center on the Rate knob.

E. Special MIDI Notes

You may have noticed that the REC button, SLICE SEL button, and PLAY button Notes are on every channel, and are accessible without transposing on a regular 88-notes MIDI keyboard by being right at the bottom (MIDI A1, Bb1, & B1), but there are more control notes that are more useable from a MIDI sequencer, HW or DAW.

Special off-range (DAW only) MIDI Note Assignments:

These control notes can be very useful when doing a MIDI automation. Notes are easier to deal with in a piano- roll / step sequencer. As mentioned above these notes are out of range of a regular keyboard without transposing it down.

SGS Record: **Note D1** (14): This is the same as holding SLICE and tapping REC to enter SGS mode. To switch to play the SGS, "tap" REC button us usual -but with MIDI note A1 (REC)

SGS Restart: **Note E1** (16): If there is a free-running, or clocked, SGS sequence playing this note will re-start it. This can be useful for syncing a free-running (time based) SGS sequence to a MIDI sequence without losing the cadence of the original.

SLICE: **Note F1** (17): This note will create a new Slice regardless of SLICE SEL setting. Hold (>1 sec) as with SLICE button will exit Slice Play or (>4 secs) erase Slices! Remember there must be something playing/recording to make a slice.

TRIGOUT: **Note G1** (19): Like the CC#88, this note will send a trigger output from REC T/F/C jack as long as the T/F/C is set to CLK. This could be very useful for trigger/gating an element in your rack and being up to 1 second long can trigger even slower modules. * If there is a MIDI clock present, it will also output pulses at this jack

MIDI Channel Slot # 2 Special Notes:

PlayFX ST/END: **Note C2** (24): Switches PlayFX to Start/End mode even when PlayFX is active

Play FX GMOVE: **Note D2** (26): Switches PlayFX to G-Move/Size mode even when PlayFX is active

Play FX PO/SIZ: **Note E2** (28): Switches PlayFX to Position/Size mode even when PlayFX is active

Stutter: **Note C8** (96): Toggles Stutter Mode on/off with last knob settings or random if there are no settings on knobs (i.e. they are set to zero) * This is a fun note!

A Final Note... on Notes:

All notes that play a Slice (or PlayFX on a Slice) will play-through on a tap, but if the note is held for longer than 1/3 of a second then the sample/slice will stop on release. If there is no Slice but a PlayFX on a sample, this function is ignored. If PlayFX T/F/G is set to GATE then PlayFX will last as long as the normal note is held. Only Channel Slot # 1 can play PlayFX (with rate change) without Slices

** Holding PlayFX "button" note (MIDI B1) will end PlayFX when released, even though LED went off

F. Pitch Wheel

The MIDI Pitch Wheel (found to the left side of many keyboards) acts on samples as will the normal function of Pitch Wheel. The default range is +/- 2 notes, which is usually the rule of thumb with Pitch Wheel. This range can be permanently changed away from this default up to +/- 1 octave in MIDI setup. (Section G.)

Pitch Wheel can be used to bend sample "notes" at any time, with the exception of shifting higher than center during Record or running Echo. PlayFX and Slices work with pitch wheel.

G. 1-2-3-4 MIDI CC's

Controlling the Reflex using MIDI CC's (Controller Changes) is similar to moving the knobs on the panel, except that they are all available without having to switch or select as with the panel. For example, changing a Stutter setting and a PlayFX setting means holding the PMODE button to toggle between them, whereas via MIDI it's a simple matter of changing the CC value.

If using a DAW (Software in a computer) these CC's can be set into the DAW and used as is, but if you are using a desktop MIDI controller, or a keyboard with CC's, the Reflex CC's may not align with those on your hardware. This can be changed (see Section G.)

As the Reflex shares some common attributes (Volume, Pan, Balance, footswitch, etc) matches to standard RPN's have been attempted. Unfortunately many parameters of a sampler do not at all match up with the standard synth-based CC origins. So it's hit & miss.

The Reflex CC's will operate on MIDI Channels 1, 2, 3, and 4 in the same way. This reduces complexity when using the different channels.

* These CC's act as a "take-over", but the "real" knobs have priority when moved.

RPN's (Registered Parameter Numbers)

The Flash-8 has a handful of "standard" MIDI CC numbers, but because the Reflex LiveLoop is so far away from the intended MIDI design use, most of the CC's are custom. Besides the expected RPN's of Sample Volume (CC#7) and Pan (CC#10), which can be changed by the user, there are a couple that are fixed:

Portamento:

The standard MIDI RPN for portamento (CC#5) is recognized by the Flash-8 and can adjust the slew of changes in Rate. It is bi-directional time-based (always takes equal time) with a fairly subtle speed range from 0 (Fast) to 127 (slow). Porta-Mode (CC#65) includes: Off (0-31), Down Only (32-63), Up Only (63-95), & Both Directions (96-127). 0 & 127 will work with standard foot pedal or foot switch.

This feature is a RPN so is not remappable.

Sostenuto:

A sustain pedal (RPN CC#66) can be used while playing slices to extend them past their end. This is especially useful if playing short 1-Shot Slices without having to turn off the Slice LOOP LED. Sustain can be left on throughout a piece. Changing Slice LOOP will reset the Sustain setting to the LOOP setting. Being a RPN, this feature is not remappable.

The following Table lists all of the CC's recognized in a default setup. Once you modify these they will be altered and no longer true. Remember to mark down in your custom numbers (CC#) once you have modified!

- - - - Reflex LiveLoop Default MIDI CC Chart - - - -

Function	CC#	LED	Description / Notes
Blend Sampler Level	07	-4	Sets level of Sampler Output (Blend CCW to center)
Blend Sampler Pan	10	-3	Sets level of Sampler Output as Pad from Left to Right
Blend Input Level	09	-2	Sets level of AC Input (Blend CW to center)
Blend Input Balance	08	-1	Sets level of AC In Mix as Pad from Left to Right
Feedback Left (FX)	11	+1	Sets Feedback Level (coarser) for FX Side (L)
Feedback Right (RP)	12	+2	Sets Feedback Level (coarser) for RP Side (R)
Rate Full (Coarse)	00	+3	Full Range Rate Control (very Coarse)
PlayFX Coarse <u>Top Pot</u>	13	+4	Global PlayFX control of ST/GM/POS (not Stutter)
PlayFX Coarse <u>Bot. Pot</u>	14	-4	Global PlayFX control of END/SIZE (not Stutter)
Stutter Coarse Left	16	-3	Sets Stutter Coarse Left (Does not turn Stutter on)
Stutter Coarse Right	17	-2	Sets Stutter Coarse Right (Does not turn Stutter on)
Left EQ LOW	20	-1	Sets Left Bass: 0= -15dB, 63/64= 0dB, 127= +15dB
Left EQ MID	21	+1	Sets Left Midr: 0= -15dB, 63/64= 0dB, 127= +15dB
Left EQ HI	22	+2	Sets Left Treb: 0= -15dB, 63/64= 0dB, 127= +15dB
Right EQ LOW	23	+3	Sets Right Bass: 0= -15dB, 63/64= 0dB, 127= +15dB
Right EQ MID	24	+4	Sets Right Midr: 0= -15dB, 63/64= 0dB, 127= +15dB
Right EQ HI	25	-4	Sets Right Treb: 0= -15dB, 63/64= 0dB, 127= +15dB
- Fine Controls -			
Feedback Left Fine	43	-3	Sets Feedback Level (finer) for FX Side (L)
Feedback Right Fine	44	-2	Sets Feedback Level (finer) for RP Side (R)
Rate Full (Finer)	32	-1	Full Range Rate Control
PlayFX Fine <u>Top Pot</u>	45	+1	Global PlayFX control of ST/GM/POS Finer 0-127
PlayFX Fine <u>Bottom Pot</u>	46	+2	Global PlayFX control of END/SIZE Finer 0-127
Stutter Fine Left	48	+3	Sets Stutter's Fine Left (Does not turn Stutter on)
Stutter Fine Right	49	+4	Sets Stutter's Fine Right (Does not turn Stutter on)
Peak BackSlice Time	121	-4	Adj. Left for more Peak Slice Advance. 0-127
- Switches - Most of the Reflex Modes / switches can be controlled using these CC's			
Stutter Mode on/off	80	-3	Switch: Off: <64, On: >=64
Slice LOOP on/off	81	-2	Switch: Off: <64, On: >=64
PlayFX LOOP on/off	82	-1	Switch: Off: <64, On: >=64
Peak Slice on/off	83	+1	Switch: Off: <64, On: >=64
SLICE (Create Slice)	84	+2	Switch: Low (<64) to High (>=64) Creates a Slice now.
RateUnLock on/off	85	+3	Switch: Rate UnLocked: <64, Rate Locked: >=64
CLOCK_DIV 1-16	86	+4	Selector: /1 to /16 (every 8 steps on MIDI CC)
PlayFX Scrubbing on/off	87	-4	Switch: Off: <64, On: >=64
TRIG OUT (CLK)	88	-3	Switch: Off: <64, On: >=64 *REC T/F/C must be @ CLK
MODE Select	89	-2	Selector: 0=Layer, 1-126=Echo, 127=R/P Mode
PSEL PlayFX Select	90	-1	Selector: 0-31=St/End, 32-95=GMove, 96-127=Pos/Size
REC T/F/C Jack+MIDI	98	+1	Selector: 0-31=Trig,32-95=Footswitch,96-127=ClockI/O
PLAY T/F/G Jack+MIDI	99	+2	Selector: 0-31=Trig,32-95=Footswitch, 96-127=Gate
EQ CV Jack	106	+3	Selector: 0-25=LOW,26-51=MID,52-77=HI,78-103=All,>103=Blend
Left EQ MID FREQ	26	+4	Selector: 0=500Hz, 1-31=1KHz, 32-63=1.5KHz, 64+ = 2.5KHz
Right EQ MID FREQ	27	-4	Selector: 0=500Hz, 1-31=1KHz, 32-63=1.5KHz, 64+ = 2.5KHz
REC Button (direct)	102	-3	Momentary: Rec button Pressed: >=64, Released <64
SLICE Button (direct)	103	-2	Momentary: Slice button Pressed: >=64, Released <64
PLAY Button (direct)	104	-1	Momentary: Play button Pressed: >=64, Released <64
SLICE SEL button (dir)	105	+1	Momentary: S.SEL button Pressed: >=64, Released <64
PINGPONG R→ L in	03	+2	NEW! Internal Feedback patch Right→Left Sampler In
PINGPONG L→ R in	02	+3	NEW! Internal Feedback patch Left→Right Sampler In
Velocity Curve (Global)	107	+4	NEW! 0 (full velocity) to 127 (near linear Curve)

##	These CC's if sent will change the power-up / user settings (not permanently) Use caution
+/-	Select to this color (R/G/B/O/V/Y on RGB LED) and LED Circle (-4 to +4) to capture a new CC (Customize)
##	This also has a MIDI NOTE Assignment. See next page.

-Additional Descriptions on:

Ping Pong:

"Ping-Pong" levels are internal cross feedback from L to R, and R to L. Setting one side higher than the other gives a panning effect when used in conjunction with some feedback.

Velocity Curve:

This CC (#107 default) will allow sample velocity curve to be set from "full on" at zero to deepening curve to near linear at 127. A comfortable "piano" setting is around 50.

G-Move Detents:

An update to the Reflex at the time of release of the Flash-8 (V.2.00) has added detents, or pauses, to GM knob at +/-1x speed, and at +/-2x speed. This makes it easier to match the original tempo while being able to shift the pitch, plus be triggered in sync etc.

The "Top Pot" MIDI CC#13 when in G-move will pause at:

0 (-2x), 36 (-1x), 64 (hold), 95 (+1x), and +127(+2x).

Like the real knob, the +/- 1x points will flash the LED circle momentarily.

Stutter On/Off:

Assigned to CC#80 by default (and note C8, 96 on MIDI Channel Slot # 2) Stutter can be controlled via MIDI. If there have been no knob adjustments or CC's to stutter sent while Stutter is running, semi-random values will used. "Semi" in this case means always sounds great!

And a word on CC's:

The momentary CC's (Switches) must be turned back to <64 (< half) after a time as this is the equivalent of holding the button in on the panel if left >64.

These are very good for automation of the Reflex:

During a MIDI sequence, vocals of a certain part of your song are Recorded and Sliced, then the Slices are played into the song further along.

All of the Selector CC's are instant and will show on the panel. These are in lieu of tapping a button to select. The EQ band adjustments won't change the EQ CV input selection.

The switches can be left "on" or "off" but some MIDI Notes may render them inaccurate, i.e. the PlayFX switch is on, but a Note causes an exit from PlayFX. At this point the CC is no longer valid.

The "Fine" controls are complimentary to their "coarse" counterpart with exception to Stutter Mode where the "Fine" is a completely different Stutter Effect also active and not a Fine extension.

PlayFX "Top" and "Bottom" CC pots are enacted upon whatever PlayFX Mode becomes active, just like the real panel knobs. This reduces the CC count to only 4 CC's. CV's have no affect, but knobs can resume control by adjusting.

The REC T/F/C TRIG OUT CC is a real time trigger/gate output to control external modules. The REC T/F/C selector must be set to TRIG. If set to CLK, then MIDI Clock/6, /ClockDiv is output (below) There is also a global MIDI note that can output a Gate up to 1 second long: Note G1 (19)

H. Customizing CC's and MIDI Channel Slots

As MIDI is so flexible and is used across so many different types of hardware, some of the Flash-8 should also be flexible.

Custom CC Numbers:

The CC table in section F. is the plan initially loaded into the Flash-8 (Reflex) on updating, but if you have a fixed MIDI controller with CC's that are not changeable, fear not!

The Flash-8 CC assignment can be permanently changed.

Here's how:



- 1) Press and hold PLAY T/F/G button for >5 seconds to enter CC programming mode
- 2) Turn the Rate knob slowly. Notice the EQ RGB LED changes colors.
- 3) Refer to the Chart in previous section F. Choose the RGB color and LED Circle LED that points to the CC function assignment you want to change.
- 4) Tap REC button to arm this function selected for an update
- 5) Move the CC knob (on your controller) you want to be assigned to the selected function. This will update and modify the previous CC# assignment with the new CC.
- 6) To modify more CC assignments, repeat steps 3, 4, & 5.

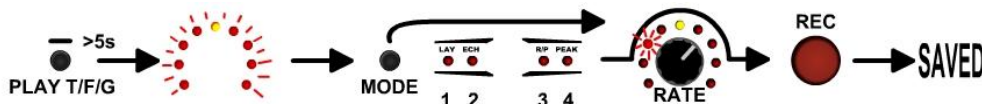
* To reset all CC's to the default state, turn the Rate knob fully clockwise and tap REC.

** Duplicate CC's will not be removed, so it's up to you to re-assign them as shown above. Portamento and Sustain CC's are fixed and not programmable.

Customizing MIDI Channel Slots:

On shipping, the active MIDI Channels for each function as in sections A, B, C, & D are 1, 2, 3, & 4. These Slots can be re-assigned to new MIDI Channels from 1-16.

Here's how:



- 1) Press and hold PLAY T/F/G button for >5 seconds to enter CC programming mode
- 2) Tap the MODE button (upper left of big knob) to select which MIDI Channel Slot to modify. The 4 mode LED's indicate the slots in order.
- 3) Turn the Rate Knob to select a MIDI Channel 1-8 (Amber LED off) or 9-16 (Amber on)
- 4) Once you have selected the MIDI Channel, tap the REC button to save.
- 5) Repeat steps 2 - 4 for other slots and tap PLAY T/F/G button to exit

*Make sure not to assign the same MIDI Channel to 2 different slots, this will confuse the Reflex, and it won't function properly. Remember to write down the new Channels!

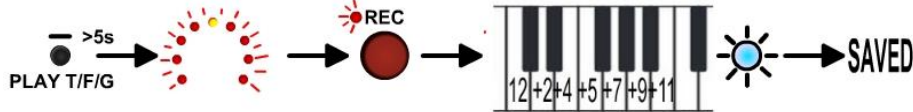
**To reset all MIDI settings to factory default, enter into CC programming mode and turn the Rate Knob fully clockwise (all of LED circle will light) then tap the REC button.

*** All of these CC's and the MIDI Channels Slots (plus Pitch wheel range) can be set from a customizable/editable MIDI SysEx message. A SysEx can be edited as plain text so you can save configurations and change between them from time to time

> The default SysEx (*.syx) can be found at www.freshnelly.com/reflex/flash8.htm

Setting Pitch Wheel Range:

The Pitch Wheel range is pre-set to 2 notes. This range can be increased up to 1 octave (2 octaves total, 1-12 each way) using the CC programming mode as follows:



- 1) Press and hold PLAY T/F/G button for >5 seconds to enter CC programming mode
- 2) Tap the REC button to arm for a change, but turn no knobs / send no CC's!
- 3) On your keyboard, tap a note above any "C" to set the range. The RGB LED Flashes.
- 4) Tap PLAY T/F/G to exit.

Range examples would be:

Tap Note C: Will set full range +/- 1 octave to the Pitch Wheel.

Tap Note E: Will set +/- 4 notes to the Pitch Wheel.

Tap Note G: Will set +/- 7 notes to the Pitch Wheel.

Tap Note D: Will set to original +/- 2 Notes

*This "001 - 012" setting can also be made in a SysEx file, see Section IV.

Other MIDI stuff:

Blanked Messages:

Because of possible confusion, some of the CC's are "blanked" immediately after a MIDI Play or Continue message. This blanking only lasts 200mS after which these CC's can be changed. This prevents certain settings causing inadvertent records or mode switching.

Blanked CC's are:

Rec T/F/C: Will remain as was set prior to MIDI Play

Play T/F/G: Will remain as was set prior to MIDI Play

MODE: Will remain in the present mode to prevent resets

PlayFX Mode: Will stay in the same PlayFX mode as was prior to MIDI play

*It is always good practice in MIDI sequences to allow some time (a bar or use a form of lead-in) after a Start as a lot of data is being sent to all instruments and could cause some instruments to skip the first note or play it wrong (as CC's haven't loaded), or with a lot of latency.

REC/PLAY Notes Initial Samples:

If no samples have been created by REC/PLAY Notes (Channel Slot 2) then the first 10 Slices that exist can be accessed until replaced by a recording (black keys). If no Slices exist then the last recorded audio will be on all 10 keys. If no Sample has been loaded yet, then, well, nothing!

Program Change & Bank Select:

Program Change messages are ignored by the Reflex LiveLoop Flash-8 expansion board, so can be used even on Channels assigned to Slots 1-4, for other things.

All Unimplemented CC's (unless changed by you) are ignored, as are MIDI Channels above Channel 4.

Bank Select Coarse and fine are also the Sample Rate Coarse & Fine (CC#0 & 32) which can be useful if you want to numerically select a sample rate. 64 & 64 is centered. These are not notes, but % of range. (i.e. 76 & 127 is + 1 octave)

I. Special MIDI Controls & Commands

There are several other features and controls when controlling the Reflex via MIDI, and that opens up a new vista of possibilities.

MIDI Clock:

If a MIDI Clock is present at the Flash-8 MIDI input, the Clock can be used to control certain functions in the Reflex, as would a patched Clock to the REC T/F/C.

The most obvious benefit is MIDI Clock sync and output. The Reflex can be used as an interface to control other modules via MIDI Clock to REC T/F/C output, or an Echo can be synced to MIDI in the same way it would be synced to a clock trigger input.

In order for MIDI Clock to operate, there must be a MIDI Clock from the MIDI controller or source, and the REC T/F/C jack must be set to CLK. (This can be done via MIDI CC also)

MIDI Clock runs at 24 PPQN (pulses per quarter note), so that must be brought down to a new clock before feeding into the Reflex ClockDiv setting. So it is pre-divided by 6 to get a 4 clocks per 1/4 note, or 1/16th's. Then the ClockDiv sets the output interval from 1/16th note to a full 4/4 bar (whole note).

So ClockDiv = 8 means only 1 clock per 1/2 note. At 120 BPM MIDI the clock output, or an Echo, would cycle at 60 BPM, 1 per second. *See the Reflex User manual for more on Clock.*

When set, the REC T/F/C jack will also output the clock defined as 4/4 as follows:

MIDI PPQN / 6 → ClockDiv Setting ∴ 24/6 = 4 / ClockDiv (Output Clock

ClockDiv=1	1/16 note clock size	Odd ClockDivs:	
ClockDiv=2	1/8 note clock size	ClockDiv=3	3/16 (1/8+1/16) note size
ClockDiv=4	1/4 note clock size	ClockDiv=6	3/8 (1/4+1/8) note size
ClockDiv=8	1/2 note clock size	ClockDiv=12	3/4 (1/2+1/4) note size
ClockDiv=16	Whole note clock Size (bar)		

A MIDI "PLAY" or "CONTINUE" message will reset the Clock divider and count so the clock follows in sync with the sender.

A MIDI "STOP" message will stop the clock output, but will not stop an Echo/Layer as with the "real" clock input jack. This can be useful for echoing out of a piece.

* The clock output is pretty close to 50% duty cycle so can be used as an envelope Gate also.

Clock Div Setting:

CC#86 (default) allows the Clock Div setting to be changed via MIDI (not permanently) as follows:
0-7:/1, 8-15:/2, 16-23:/3, 24-31:/4, 32-39:/5, 40-47:/6, 48-55:/7, 56-63:/8
64-71:/9, 72-79:/10, 80-87:/11, 88-95:/12, 96-103:/13, 104-111:/14, 112-119:/15, 120-127:/16

Tips:

To Start and Sync an echo remotely from a MIDI sequencer, remember to "arm" the REC Note (A1) just before the beat/bar you want echo to sync to. The ClockDiv setting will end the Echo. In a nutshell, just do in MIDI what you would do with the buttons!

If you want an odd-sized (larger) echo, just send the REC button message, then another at the desired time. It likely won't stay 100% in sync, but offers some interesting cadences!

MIDI Clock with SGS (Slice Groove Sequencer) will act the same as a clock into SLICE jack, and transforms the Sequence from "Time" to "Step". REC T/F/C will output per Slice...clock!
If you want to sync a "free-running" SGS (not clock), use the global SGS re-start note E1.

IV. Tips, Diagrams, Q & A, MIDI SysEx

Tip:

Buttons vs. switches / selectors:

CC's defined as momentary switches or buttons are meant to be on only briefly (CC102-105).

If you are using automation in a sequence, remember to release them as you would the real button. Most DAW MIDI outputs will send all CC's upon MIDI Play, so if you don't want a song to change a parameter, don't include it in the "song".

Tip:

Samples can be recorded/created on-the-fly via a MIDI sequence, then Sliced and played into the running sequence. This is an unequalled addition to any DAW as this feature cannot be recreated in software (AFAIK). I have personally done this, which is great for vocals or a guitar riff/refrain as it changes each time the sequence is played!

Peak Slicing can be enabled (CC#83) during a record during a sequence, but remember to "hold" the Slice Button (CC#103) for 3 seconds to erase all Slices first . . or not!

Tip:

If using Feedback Fine and plan to use the same MIDI settings on a different Reflex, there may be discrepancies as each Reflex is calibrated individually. Try to avoid the fine controls if possible in this case. The coarse controls will max at same value as the Feedback knob.

Tip:

If you are going to be using PlayFX in a sequence, make sure the sequence sets which PlayFX mode (CC#90, see MIDI CC's) to use before sending note MIDI B1, or the CC#104 button.

Remember CC "momentary buttons" (and notes) work the same as the real button, so a long "on state" will be perceived as a hold to end PlayFX.

* If holding PlayFX by MIDI the PlayFX LED will go out after 1 second. This is normal.

**PlayFX modes switch can be changed on-the-fly, unlike the panel, but make sure the "knobs" are appropriately adjusted for the new PlayFX mode as well!

Tip:

Even though all 4 MIDI channels can be used in the same sequence, precautions must be taken in some cases, i.e. recording a "black note" sample, then recording from the REC note or CC at the same time. This would give unexpected / unpredictable results.

The best use of combined channel slots is 3 & 4 as 3 is Slice Play exclusive and 4 will change the pitch of those Slices/samples. Channel slot 1 can also be used with 4 but they will continually "take-over" from each other if channel slot 1 is not playing Slices. You get the picture.

Tip:

Channel Slot 2 Record/Play notes samples actually create a Slice that can be recalled in order of creation via Channel Slot 3 (or 1 if playing Slices)! This can be useful if you need to play an old sample or just to archive the whole session to Flash memory.

Tip:

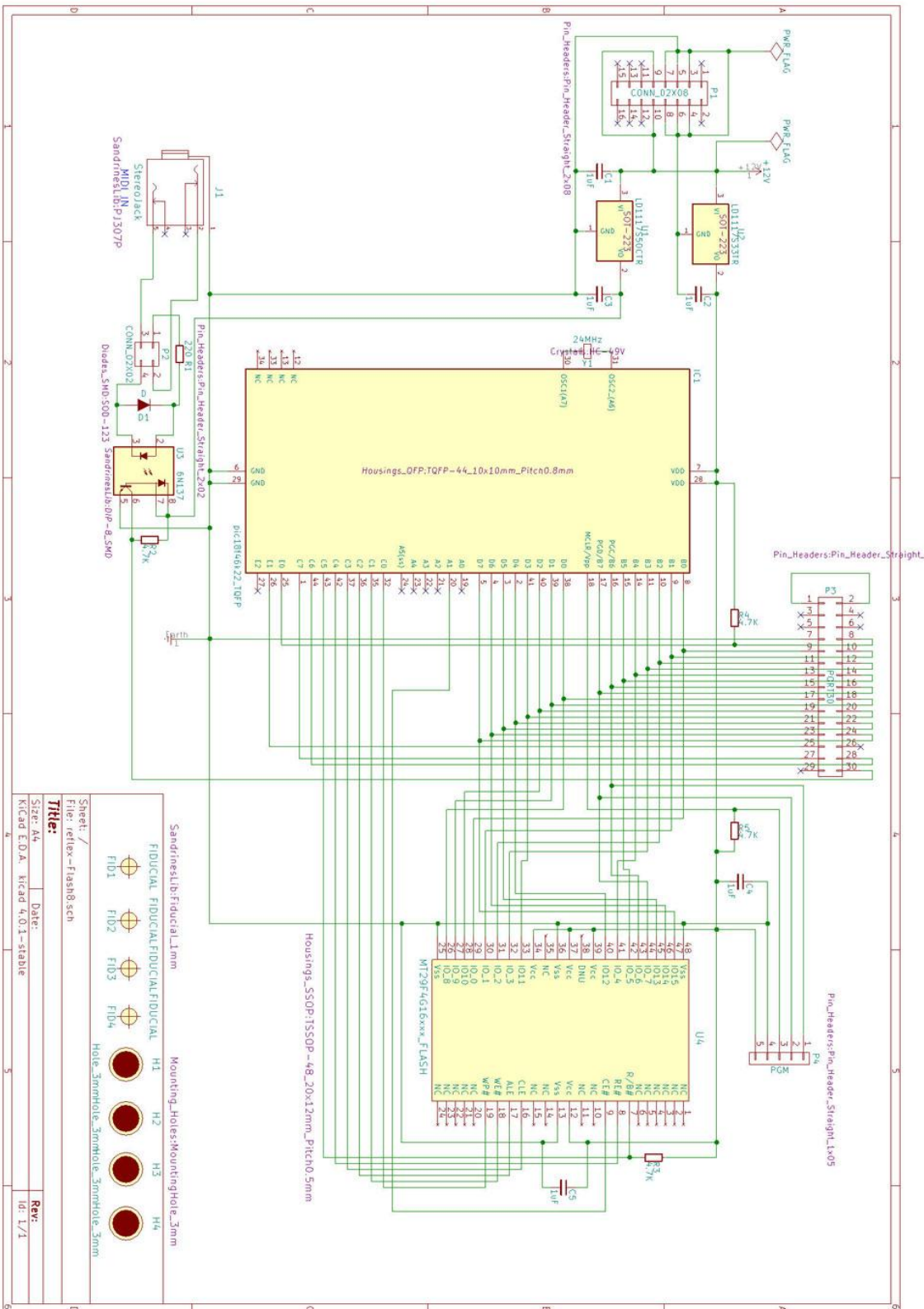
PlayFX applied during an Echo will certainly Echo as well. If you want a quick reverse of a live sound that stays in sync, this is the way to do it. Make sure PlayFX is in Start/End mode and the "knobs" in your sequencer are end to end for reverse, then trigger PlayFX note/CC, or hold it for the desired reverse time. *PlayFX LOOP on→off provides the smoothest transition after a trigger.

Tip:

Vital Functions, such as the Setup Menu (Hold SLICE SEL) and Flash entry have been omitted or blocked from MIDI control intentionally.

Tip:

If playing keyboard by hand and in Channel Slot 2 (Rec/Play notes) the pitch can be shifted by rate notes without changing the tempo using G-Move, running forward at about 2 o'clock will flash the LED circle as there is now a detent there for 1X Speed, or just adjust GM to a good tempo. GM will loop so proper sized samples are a benefit.



SandrineSLB:Fiducial_1mm		Mounting_Holes:MountingHole_3mm					
FIDUCIAL	FIDUCIAL	FIDUCIAL	FIDUCIAL	H1	H2	H3	H4
FID1	FID2	FID3	FID4	Hole_3mmHole_3mmHole_3mmHole_3mm			

Sheet /
 File: retex--flashb.sch
Title:
 Size: A4 Date:
 Kicad E.D.A. kicad 4.0.1-stable
Rev:
 Id: 1/1

Q & A
(trouble shooting)

Question	Answer
Q1: I can't get any response via MIDI at all	Verify the Reflex recognizes the Flash-8 by trying to enter Flash Save/Load (Hold EQ button) Check that you are sending on one of the Channel Slots (MIDI Chan. 1 - 4 by default) If so, try switching the polarity jumpers around. Check the MIDI Patch cord with an ohmmeter: 3.5mm tip → left or right of center on DIN-5 (4 or 5) 3.5mm inner ring → left or right of center on DIN-5 3.5mm Ground ring to center pin on DIN-5
Q2: I can't save my session, it just flashes/exits	When in Load/Save mode (EQ button held>3 secs) Flashing LEDs in the circle already have a session saved. Either erase one, or find one not flashing.
Q3: I can't load a session I saved earlier	You must select a flashing LED in the circle as only these have stored sessions. You may not have saved it (See saving/loading sessions section II.) If problem persists, check that the Flash-8 board is still connected / to power See Q1
Q4: How can I move a session to another LED?	Just load the session, then re-enter Flash mode and save it to an empty LED (not blinking)
Q5: Can Flash-8 boards be changed?	Yes. They can be changed to archive a set of sessions if you wish. The new board's slot states are only recognized on power-up though. If you wish to "hot-swap" (with power on) please contact us first for advise!
Q6: Are MIDI assignments saved to the Flash-8?	No they are not. Reason being that usually the same hardware setup will be used throughout the sessions. A work-around is to create a different SysEx file (.syx is text) for each session. This is only good if using with a PC/ DAW... <i>Contact us.</i>
Q7: Which Channel does the MIDI CC's work on?	The same assigned MIDI CC's work on all of the 4 Channel Slots, for simplicity. The MIDI notes of course are Channel dependant.
Q8: I simple cannot erase a slot!	The erase button (white SLICE button) doesn't operate the same as the REC & PLAY. It must be held until RGB LED goes bright white. (A safety!)

MIDI SysEx Files:

The Flash-8 is capable of receiving MIDI SysEx files using any program that can send a SysEx (.syx) file, like MIDI Ox. Because a SysEx file can be plain text, it is easy to edit using any text editor. On the Reflex site there is at least one .syx to act as a guide.

***If you have MIDI-Ox, just double click on the .syx file then select Command Window / "Send SysEx"**

```

ΩSYSEX>
BLEND_SAM_LEU_00:007
BLEND_SAM_PAN_01:010
BLEND_INP_LEU_02:009
BLEND_INP_BAL_03:008
FEEDBACK_LEFT_04:011
FBK_FINE_LEFT_17:043
FEEDBACK_RGHT_05:012
FBK_FINE_RGHT_18:044
RATE_F_COARSE_06:000
RATE_F_FINEST_19:032
PLAYFX_C_TOPP_07:013
PLAYFX_F_TOPP_20:045
PI AYFX C RTPP 08:014

```

In this partial sample of a SysEx file for the Reflex Flash-8, you can see that equal line lengths are very important.
If you switch your text editor to a font that is equally spaced - i.e. Typewriter, MS Gothic, Terminal (Greek shown), then it'll be easy to see if a line has somehow become longer/shorter.
Primarily, the 3 digit number after the colon will assign the CC # to the described parameter, so this is all you need to change.
This value can be between 000 and 127
If any parameters are deleted, the old values will remain. So you may remove unwanted "modifiabls" if you wish, but don't leave blank lines.
***The odd chars at start & end of this file are SysEx headers. Do not remove them unless your MIDI program adds them**

The 4 MIDI Channel Slots can also be edited using the same 3 digit format (001 - 016)
For some, this method may be easier than using the panel and "MIDI learn" method, so the option is available. * Be cautious of duplicate assignments!

----- www.freshnelly.com/reflex/flash8.htm -----