



The CR-78 was originally introduced in 1978, and was in incremental but significant development in the evolution of Roland's classic line of drum machine. Roland's earliest drum machines appeared in the early 70s under the "Acetone" banner, and like other drum machines of the era, these were intended to sit atop the home organs that were all the rage. The CR-78 and its close cousin, the CR-68, upped the ante with superior analog drum sounds. More significantly, its onboard microprocessor allowed users to program and store four custom beats. Though the method for inputting user patterns was crude and limited, it was a breakthrough for its day, and was embraced by a laundry list of pro musicians including Ultravox, Phil Collins, Hall and Oates, Blondie, Orchestral Manoeuvres in the Dark, and more.

Cherry Audio's CR-78 accurately recreates the original unit's punchy analog drum sounds and includes exact replications of its 34 onboard preset rhythms. The original CR-78's unique "Cancel Voice" and "Add Voice" controls

allowed a surprising degree of flexibility when using the onboard rhythm patterns - we've included the "Cancel Voice" buttons, and greatly extended the "Add Voice" capabilities with a full onboard mixer. We've also done away with the finicky user beat programming and replaced it a familiar x0x-style button-per-step interface, as well as an easy-to-use song mode for pattern chaining. The fun "variations" drum fill section has also been reproduced exactly.

Unlike other sample-based emulations, Cherry's CR-78 uses modeled synthesis to recreate the classic tones of the original, and makes a quantum leap forward with fully editable sound parameters, enabling all manner of subtle-to-unrecognizable sound tweaking. Finally, four onboard effects are provided, with a uniquely fast and fun "send button" UI for each individual sound in the mixer section.

Terminology in this manual, so we're all on the same page:

A *pattern* refers to one of the built-in (*Play Mode* set to *Preset*) or user-created rhythm patterns (*Play Mode* set to *User*). A *beat* refers to a step number within a rhythm - for example, "beat 1" would be the first step in a pattern. **For clarity, we'll avoid using "beat" to refer an entire rhythm pattern.** (Hopefully Janet Jackson doesn't read this, because "GIMME A RHYTHM PATTERN!" doesn't roll off the tongue very well.)

Also, italicized text generally refers to a specific control on the front panel, such as the *Measure* or *Instruments Selector* controls.

Pre-Purchase Demo Mode



If you haven't purchased the full version of CR-78, it will run in demo mode. All functions will work, but inharmonic tones will occasionally sound (the LED next to *Demo* in the top toolbar will illuminate when the ugly tones are sounding). We've also added a handy button to make purchasing easy, so you've got no excuse! As you might expect, all the demo stuff disappears once CR-78 is purchased.

Technical Assistance

Cherry Audio's unique online store and automatic updating should make

operation a smooth experience, but if you run into any issues or have questions, you can discuss issues online at the **Cherry Audio forums**.

... or you can communicate directly with one of our ~~beauty pageant-winning~~ tech support staff at:

<https://cherryaudio.kayako.com/>

The purple strip at the top of the interface is where you'll load, save, and create patch presets. It contains utility functions such as undo/redo, UI zoom, under-the-hood settings, and more.

Anatomy of a Preset (Important!)

If you've used other Cherry Audio instruments, the patch browser should be familiar. Since CR-78 is a drum machine with pattern creation and storage integrated in the main UI, we'll go over the hierarchy of rhythm and sound storage.

A patch browser preset stores *all* current sound settings and patterns. What you'll hear when you hit play depends on the current *Play Mode* switch position, but regardless of the switch position, a patch stores the following:

Global/Panel Mode buttons

The current *Panel Mode* view is saved with a patch.

Main Panel

- **Play Mode / Preset**- The current rhythm button(s) selection
- **Play Mode / User**- A patch includes 98 rhythm patterns. In Pattern mode, the currently playing pattern is selected using the *Pattern Select* up/down buttons.
- **Song Mode**- When *Song* mode is selected, a chain of user patterns of up to 99 steps can be created. A single song is saved with a patch.

All other main panel settings are stored with the exception of Start/Stop state. Play or stop status is **not** stored with patches. When a new patch is selected, CR-78 remains in the current state; that is, if it's currently playing, it continues to play; if it's stopped, it stays stopped. We did it this way so users wouldn't have to keep hitting the *Start/Stop* button every time the pattern was switched.

Voice Edit Panel

All voice edit panel settings are saved with a patch.

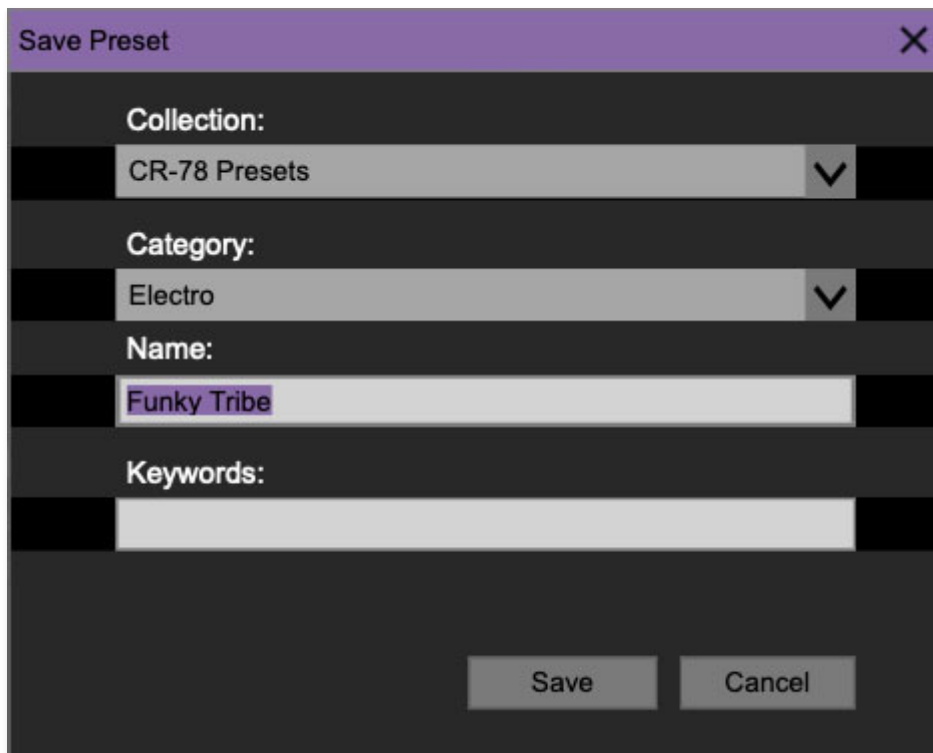
Effects/Mixer Panel

All effects and mixer settings are saved with a patch.



Top Toolbar and Preset Browser Controls

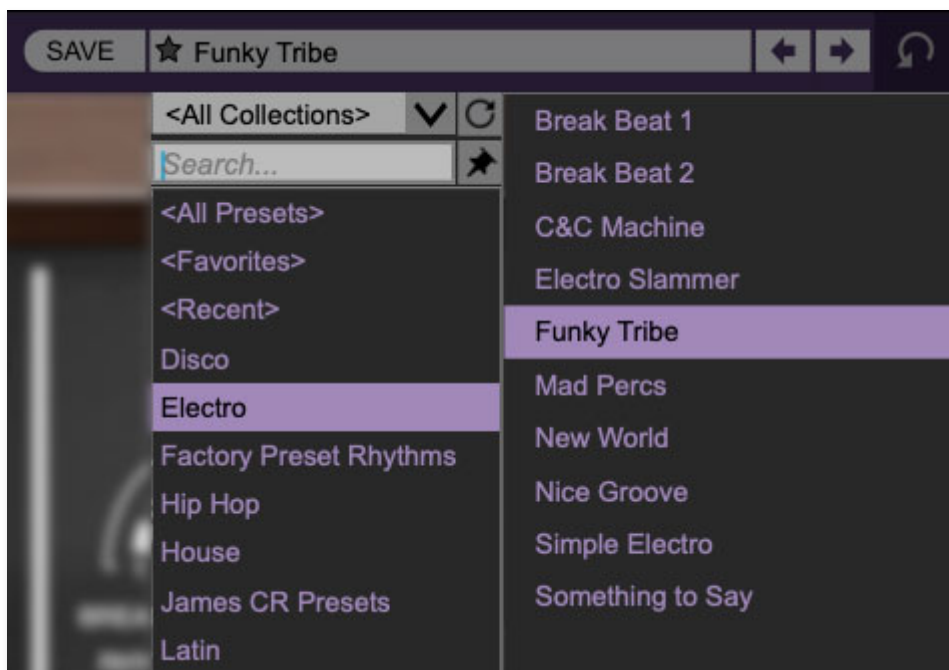
New- Opens a new blank patch. If an unsaved patch is currently open or you've modified an existing saved patch, a dialog asks if you'd like to save the patch in its current state. This greatly reduces the possibility of losing an edited unsaved patch.



Save- Use this to save patches. There are a couple of levels of hierarchy:

- **Collection**- This is the top level of organization, and contains entire “sets” of presets. The *CR-78 Presets* are the main included collection. We also include a *User Presets Collection* for storing your own presets, but you're free to create your own collections. To create a new collections, click in the *Collection* text field (where it says *User Presets* above) and type a name. User-created sounds can be freely saved to any collection; we like to keep 'em separated for organizational purposes.
- **Categories**- Within each *Collection* are a number of sound categories. As with collections, you're free to create as many categories as you like. To create a category, click in the *Category* text field of the *Save* dialog window and type a new category name.
- **Patch**- A patch is an individual sound. To save a patch, simply type the name in the *Name* field and click *Save*.
- **Keywords**- You can add descriptive words such as “vintage,” “new wave,” “boing boom tschak,” etc., to patches to make them appear when terms

are typed in the *Search* field. Use commas to separate multiple keywords entries.



Browsing Patches- Patches can be browsed by clicking the *<Select Preset>* field. To select a preset collection, click in the area that says *<All Collections>* or on the downward-facing arrow next to it.

Clicking on the left-side categories narrows down which patches are displayed.

- **<All Presets>** will show presets from all collections and categories.
- **<Recent>** displays recently used presets.
- **Refresh-** This is the circular arrow button to the right of the downward arrow; clicking this checks the Cherry Audio server for new or updated presets.

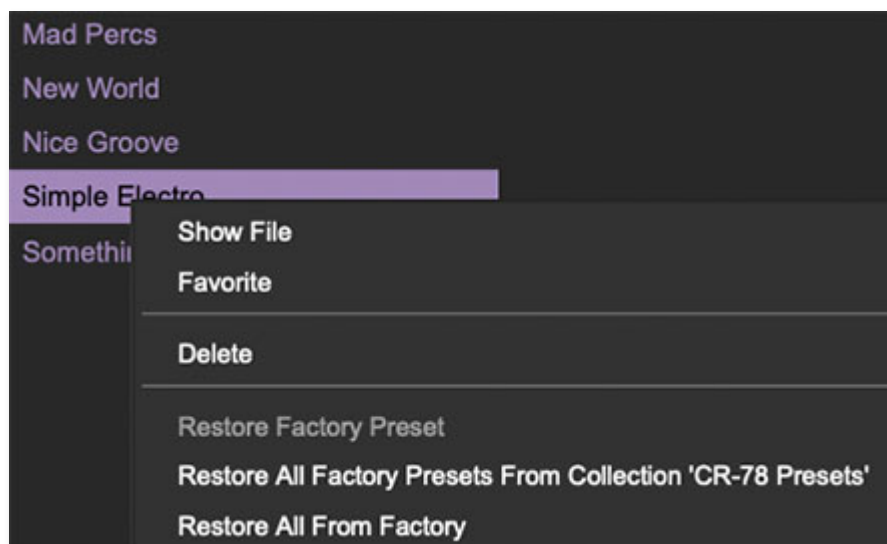


Pin- Clicking the push-pin icon locks the patch selection list open, allowing fast and easy browsing and auditioning of patches. Click the icon again to disable pin mode. when in pin mode, the up and down arrow keys can be

used to select patches. (Thanks to Starship/Phil Bennett for this useful feature suggestion.)

Preset- Step Back/Forward Arrows- These step to the previous or next preset. macOS [⌘+left/right arrow key] or Windows [CTRL+left/right arrow key] will navigate through presets back and forth in the currently selected collection/category.

Preset List Right-Click Functions



Show File- This displays the selected preset in the Mac or Windows folder containing it. This is useful for backing up or sending a preset file to another user.

Show In Original Category- Selects the preset within its category, i.e. the category will highlight in the left preset menu. The *Show In Original Category* command only displays if the preset was selected within the *<All Presets>*, *<Favorites>*, or *<Recent>* categories.

Favorites- Favorited presets will show in when the *<Favorites>* category is selected. A star will display next to the preset name. Right-click on the preset and reselect *Favorite* to un-favorite it.

Delete- Deletes the selected preset.

Restore Factory Preset- If one of the factory (i.e. not user) patches is edited and saved, selecting this command restores the patch to its unaltered "factory" setting. This menu will be grayed-out for user bank patches.

Restore All Factory Presets From 'CR-78 Factory Presets'- If any patches from the "factory" bank are edited and saved, selecting this

command restores *all* of them to their unaltered "factory" setting.

Restore All From Factory- If any patches from the "factory" banks are edited and saved, selecting this command restores *all* of them to their unaltered "factory" setting.

Importing Presets with drag-and-drop

Presets can be imported singly or en masse (as a single compressed ZIP file) simply by dragging and dropping from the desktop anywhere on the user interface.

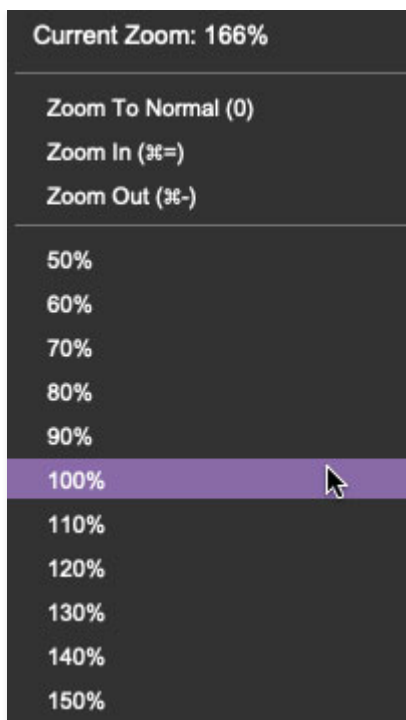
If a single *.preset file is dragged and dropped, the sound is immediately loaded and the standard Save Preset dialog appears; this lets you save the sound to the instrument's preset browser. Note that you don't have to save the sound to preset browser; if you just want to hear and play the sound, click the Cancel button in the Save Preset dialog - the sound will still be loaded.

Compressed zip files containing multiple sounds can also be drag and dropped onto the UI. This works the same as with single sounds, but instead of the *Save Preset* dialog, you'll see the *Import Preset Collection* dialog. The presets will be added as a new collection and available in the categories for which they were tagged.

Menu Strip Buttons

Undo/Redo- These circular arrows will undo or redo the last action. It remembers many steps, so if you really loused something up, keep on clickin'...

Settings- This is where user preferences for user interface, audio interfaces, user account, and more are configured. See the **Settings** section for full information.



Zoom Magnifying Glass- Click to resize the interface. Selecting *100%* returns the user interface to native size.

MIDI Tab- Opens the MIDI controllers tab for configuring internal and hardware MIDI controls. See the **MIDI Controllers Setup and MIDI Tab** section for full information.

! (MIDI Panic) - Click to send an all-notes-off message in case of, "why won't this thing stop making noise?!?" stuck-note incidents.

(If the ! MIDI Panic button doesn't shut off the sound, make sure the *VCA* switch at the bottom of the panel isn't in set to *On* position.)

Q (Oversampling Quality)- The Q button sets CR-78's internal oversampling rate; the higher the setting, the better audio fidelity will be, with the caveat that more computer processing power will be required.

Internal processing can be set to *1x* (same rate as the current sample rate of the host DAW or in the *Settings>Audio/MIDI* window for the standalone version) or to *2x*, *3x*, or *4x* the current sample rate. The sample rate is downsampled at the instrument output stage to match the current host sample rate.

For example, if the current DAW/instrument sample rate setting is 48 kHz, and oversampling is set to *2x*, CR-78's internal processing runs at 96 kHz, and is then reduced back to 48kHz at the output stage.



QWERTY Musical Typing Keyboard- Opens an onscreen keyboard allowing a standard QWERTY computer keyboard to be used for playing music notes. For more information, see **QWERTY Musical Typing Keyboard (MTK)** section.



? (Help) - Clicking this launches your web browser and opens the help document you're currently reading. Which means you're already here...

Focus Button



If you're using a tiny laptop, the user interface can potentially be hard to see. With this in mind, the *Focus* button conveniently blows up CR-78's view to roughly twice its normal size within the current window size. Unlike the *Zoom* "magnifying glass" function, *Focus* doesn't affect the current window size. By default, the patch panel section fills the current window, but the view can be scrolled vertically and horizontally with a mouse wheel, track pad, or Apple Mighty Mouse finger-scrolling. Or if you're the last person on earth still using a single-button mouse, scroll bars will appear at the window edges when in *Focus* mode. (Drop us a line from your AOL email account, 'kay?)

Using *Focus* mode couldn't be easier - just click the *Focus* button the top menu bar. To return to standard view, click *Reset*.



CA / CherryRhythm CR-78 logo - Clicking this displays “about” information, and shows the version number and current registered user ID.



The Panel Mode buttons in the top corner are CR-78's only global controls; that is, they're visible regardless of which UI page is currently viewed. They select the following three panels:



Main- The primary panel containing all the controls of the original hardware unit, give or take. It's where you'll select which patterns play, the start/stop button, tempo, accent level, fills, swing, and more.



Voice Edit- Unlike the original, Cherry CR-78 allows editing of the voice parameters of each individual sound. (No samples here, folks!)



Effects/Mixer- CR-78's effects include overdrive, flanger, delay, and reverb that can be individually applied to each sound, plus a master compressor and

six-band EQ. There's also a mixer with pan controls, mute and solo buttons, signal-present LEDs, and *Master Volume*. Note that the *Master Volume* is the same as the one on the Main page and moves in sync.

Standalone Version Panel Mode Keyboard Shortcuts

We've incorporated a few "hard-wired" keyboard shortcuts into the standalone version only. We skipped them on the DAW version because most DAWs have their own keyboard shortcuts, and focus (i.e., which one responds to the keyboard commands) can be finicky.

The QWERTY keyboard *1*, *2*, and *3* keys select the *Main*, *Voice Edit*, and *Effects/Mixer* panels respectively - this works for the *1*, *2*, and *3* keys above the keyboard and the ones in the keypad. The space bar will start and stop playback.

Alternatively, you can custom assign additional QWERTY keyboard shortcuts in the same way MIDI controllers are assigned - right-click on any control, select *MIDI Learn*, and hit the keyboard key (or hardware USB/MIDI control) you'd like to assign. We've found that in addition to the above Panel Mode button shortcuts, it's also useful to assign key shortcuts to the *Cancel Voice* buttons and the big square Variation/Fill button.

For more information on shortcut key assignment, check out the **MIDI Controllers Setup and The MIDI Tab** section.

In the sections that follow, we'll go over each section's controls in detail.



We're going to jump around the panel a little in order to prioritize the most important information to get you competently jammin' on CR-78. We've given the *Programmer* section, pattern selection, and Variation sections their own manual chapters due to the big-ish amount of information about them.

Master Volume and clip LED- Sets the overall instrument volume. Keep your eye on the *Clip* LED to prevent ugly digital distortion. The *Master Volume* and clip LED are the same as the Master Volume on the Effects/Mixer page, just duplicated for convenience.

Swing- When CR-78 is playing a 4/4 16-step beat, *Swing* delays every other 16th note by a by a percentage. If this doesn't ring a bell sonically, think of Bobby Brown's "Every Little Step" or imagine the ride cymbal in an old jazz tune... ting, tingtingting, tingtingting... that's swingin' baby!

A few of CR-78's preset rhythms are swung - *Shuffle*, *Slow Rock*, *Swing* (duh), and *Boogie*. Note that the original CR-78 didn't have a swing control; instead it created swung beats by dividing the bar into 24-step, triplet-based patterns (as opposed to the "Roland standard" 16-steps). There's no reason you can't create swung user beats in 24-beat mode (*Subdivision* setting of 6), but it's it's a little easier to swing a simple 4/4, 16-step rhythm using the *Swing* control.

Getting back to the *Swing* button, CR-78 cycles through each of the settings when clicked. Each one gets progressively swingy-er. Specifically the alternating first/second percentages are as follows:

A: 50% (straight rhythm - no swing)

B: 54%

C: 58%

D: 62%

E: 66%

F: 71% (maximum swing)

These are the "industry-standard" swing percentage offset amounts, originally established with the Linn LM-1 drum machine. These percentages weren't arbitrarily chosen - they conform to the available quantization values of a 48-pulse-per-quarter-note (PPQN) machine. **Whack this search link** if you want to geek out on how old-school drum machines and sequencers break down PPQN timing divisions.

Swing and the Factory Preset Patterns

The *Swing* buttons will affect the factory preset patterns (i.e. Play Mode set to *Preset*). But keep in mind that since swing affects every other 16th note, it won't have any audible effect on some of the simpler 8th note-based patterns (the *A* versions of *Rock-1*, *Rock-2*, and *Rock-3*, for example). That's because these patterns don't have any "alternating 16th" notes to swing, capiche?

If you'd like the factory patterns to play back in their original state, make sure to leave the *Swing* control set to *A*.

Drag-Export



Clicking and dragging the *Drag-Export* button array to a DAW MIDI track allows the MIDI data of the current user pattern to be exported either to the desktop as a Standard MIDI file (when using CR-78 in standalone mode or within a DAW) or to a DAW MIDI track (when using CR-78 within DAW).

For more information on the *Drag Export* function, please see **Using CR-78 as a DAW MIDI Sound Module**.

Accent knob, LED, and triangle menu- Accent allows selected steps to be louder than the other for emphasis; the *Accent* knob controls how much louder accented steps are than the nominal pattern level. Accent steps are

"built-in" to the preset patterns. For user patterns, accent steps are programmed like any other instrument by setting the *Instruments Selector* knob to *Acc* when programming. Setting the *Accent* knob to *0* effectively disables accents.

The LED next to the *Accent* label flashes when accented steps play.

Accent Triangle Menu- The inverted triangle menu accesses couple of useful functions.

- **Accent MIDI Note**- Sets the incoming MIDI note associated with accent. This doesn't affect anything when programming CR-78 from the front panel, but its useful if you're playing from a USB/MIDI controller and/or recording MIDI notes into a DAW. When the menu is clicked, a submenu will open showing all MIDI notes from 0-127; simply click one to select.
- **Reset To Default MIDI Note**- Resets the Accent MIDI note to default, which is MIDI note 40/E2.

Host Sync- Selects between CR-78's onboard clock and tempo control and external tempo lock from a DAW. The *Tempo* knob will gray out when *Sync* is set to *Ext* mode.

Host Sync is a global control - that is, its setting isn't stored with presets. However, DAW projects will remember its current position. More on this in the DAW mode section below.

Host Sync operates a bit differently depending on whether CR-78 is running in standalone mode or as a plug-in in a DAW, so paaayz close attention, please:

- **Standalone Mode**- When running standalone, CR-78 uses its own internal clock with BPM set by the *Tempo* knob. The *Host Sync* switch defaults to the *Off* position and is disabled and dimmed.
- **DAW Mode**- When used in a DAW, the *Host Sync* switch defaults to the *On* position. Start and stop is controlled by the DAW transport, and CR-78's tempo is locked to the DAW project tempo.

The *Host Sync* switch is global, that is, it's not stored per-preset. This was done to allow sync while auditioning patterns from our kickass preset library. The potential downside is that some preset patterns have extreme tempo settings that might sound wrong or weird at your current DAW tempo project. However, in addition to "disconnecting" transport and tempo sync, switching *Host Sync* to the *Off* position also causes preset

patterns to play back at their saved tempos, allowing the patterns to be heard as the programmer intended them.

Velocity- Enabling *Velocity* allows CR-78's sound volumes to respond to MIDI velocity. This is useful when using a DAW sequencer to control CR-78. **The *Velocity* switch has no effect when using the built-in rhythm presets or user pattern programming.**

Tempo knob and LED- When the *Host Sync* switch is set to *Off* position this sets the tempo of rhythms over a range of 20-300 BPM. Believe it or not, the original unit had an even wider range - up to something like 500 BPM, but we altered it because a large chunk of the knob range was useless (unless you're doing a *Suicide* tribute band). The LED glows solidly in stop mode, and flashes quarter notes in play mode - red on the one, and green on all other beats.

If CR-78 is being used in a DAW, the *Tempo* knob operates differently dependent on the position of the *Host Sync* switch.

- **Host Sync / Off**- Tempo is independent of the DAW project setting and the knob works normally.
- **Host Sync / On**- Overall tempo is determined by the DAW project setting. When *Host Sync* is in the *On* position, the *Tempo* knob becomes a multiplier - patterns play in sync with DAW host tempo and the *Tempo* knob divides or multiples the host tempo from 1/4 to 4X of the DAW project tempo. A setting of 5 = original tempo.

When *Host Sync* is enabled, the *Tempo* knob multiplier position is *not* saved with presets, however, its position will save with the DAW project.

Cancel Voice- These are toggling mute buttons for the *Cymbal/High Hat*, *Bass Drum*, *Snare Drum*, and *Cow Bell/Clave* voices respectively. They're particularly useful for exploring variations with factory preset patterns (and the key to the CR-78 patterns heard in many hit songs). Multiple *Cancel Voice* buttons can be enabled or disabled by clicking and dragging the mouse over them.

Note that the *Cancel Voice* buttons operate independently of the mute buttons on the mixer page. If an instrument is inexplicably muted, check the *Cancel Voice* buttons and the mixer mutes.

Fade- This fabulously useful feature allows rhythms to, you guessed it, fade in and out, respectively, at your choice of two different speeds. The *Fade* function works in *Pattern* and *Song* modes. (Remember that the CR-78's

original intended market segment was "Mall Organist," not "Diminutive Former Prog-Rock Drummer Who Senses Oncoming Things In Air at Night").

Start/Stop- Starts and stops playback of patterns or songs. The QWERTY keyboard space bar will start and stop CR-78 when running in standalone mode. It's disabled in the plug-in version because most DAWs use the space bar to start and stop the transport.

The original CR-78 included 17 preset pattern buttons arranged in two rows, with a master A/B switch variation switch for a total of 34 preset patterns. It also allowed users to program their own patterns, albeit in a rather clumsy fashion - don't worry, we fixed that, but more about that later.

Playing Preset Patterns



To play a preset pattern, make sure the *Play Mode* switch is set to *Preset*, click one of the preset pattern buttons, and press the *Start/Stop* button. If you're not seeing the multicolored preset buttons, note that each button has two separate variations, selectable via the *Rhythm A/B* switch. Most of the buttons contain two similar variations; the B version is usually slightly more complex. A few of the buttons do double-duty with two completely separate rhythms as indicated on the panel.



Clicking one of the red *Cancel* buttons at the end of the row stops the pattern at the end of the bar. If a new pattern is selected while in play mode, CR-78 waits until the beginning of the next bar to switch patterns.

Don't let the bad-home-organ names fool you - some of the seemingly silly patterns often become really cool in conjunction with the *Cancel Voice* buttons - for example, Blondie's "*Heart of Glass*" is basically the *Rhumba* pattern with the bass drum and snare muted.

Combining Patterns

On the original CR-78, you could simultaneously play two beats at once by pressing a button in each horizontal row. The original unit's mechanical buttons worked something like an old TV, where pressing one button in a row caused the currently pressed button to turn off, but with a little coercion, it was also possible to hit multiple buttons in a single row. This caused the drum machine equivalent of mixing Big Gulp soda flavors at the 7-Eleven: sometimes it works out great and sometimes it resulted in a mucky mess.



Two rhythms can be combined with Cherry CR-78 by selecting the first pattern as usual, then shift-clicking the second one. A pattern can be canceled by shift-clicking again. Only two patterns can play at once, but believe us - anything more sounds like the electronic equivalent of Keith Moon and The Muppets' Animal meeting in a dark (and overly percussive) alley.

If two patterns are playing, one in the top row and one in the bottom row, clicking the respective row's *Cancel* button will turn off the pattern playing in the row at the end of the bar, but the pattern in the other row will continue to play.

In addition to its preset patterns, users could program custom patterns into the original CR-78- it was one of the first, if not *the* first user-programmable drum machine. However, it had major limitations: patterns could only consist of four instruments, only four user patterns could be stored, and the method(s) for programming them were archaic (the better of the two methods required buying a now-crazy-rare "write switch" hardware box with a couple of buttons for programming notes and rests. Don't even ask what the charlatans of Reverb.com are foisting this gadget for nowadays...).

With that in mind, we abandoned the original programming method, and implemented custom pattern programming via the familiar TR-808-style 16-button interface (or 24 buttons - more on this later).

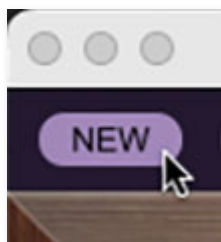
User Patterns and the Patch Browser

Each saved patch in the browser (purple menu strip at the top) consists of:

- 99 patterns, selectable with the up/down increment buttons in the *Pattern Select* selection. (*Patt/Song* switch set to *Patt*)
- 1 song, i.e. a set of chained patterns. A song can be up to 99 steps. Please see the next chapter for more information on Song mode.

Creating a User Pattern

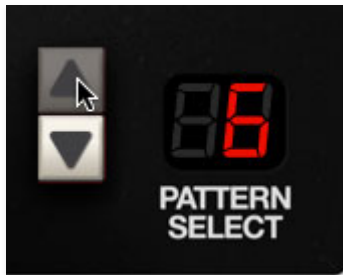
Creating your own pattern is super easy. Let's start from scratch... follow along at home!



- Click the *New* button in the top-left corner.



- Set the Programmer section *Play Mode* switch to *User*.



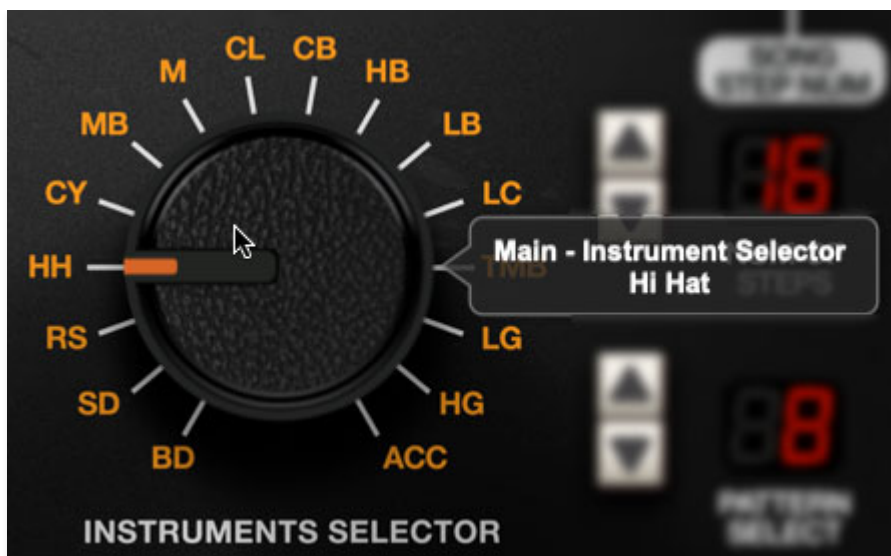
- Using the up/down increment buttons beside the *Pattern Select* display, choose the number location where you'd like the pattern to reside. If you don't have any patterns currently programmed, you can leave it set to *1*. (Remember that every saved preset in the patch browser stores its own unique set of 99 patterns, so you're not going to overwrite anything.)



- Using the up/down increment buttons next to the *Num of Steps* display, select the number of pattern steps. This determines the pattern step where the rhythm will loop back to step 1.

If you're creating a standard one-bar pattern, leave this set to *16* (one bar with 16th-note step resolution). If you're creating a triplet-feel pattern, you can flip the subdivision switch to the *6* position (one bar with quarter-note triplet step resolution). Also useful for cover versions of early J-Lo songs (if you had to write owner's manuals, you'd be making bad jokes too).

Num of Steps can also be set to any desired length to accommodate odd time signatures. If you're doing that, we'll assume you and your fellow Mahavishnu Orchestra tribute bandmates know what you're doing.



- Using the *Instruments Selector* knob, select the first instrument you'd like to program.



- Pattern steps can be entered with CR-78 in stop or play mode, but it's more creative and fun to program patterns while in play mode. Click the *Start/Stop* button to enter play mode.



- Since there isn't an audible "click track" per se, it's best to program a simple timing reference; the bass drum (*BD*) or hi-hat (*HH*) on 1/4 notes (steps *1, 5, 9, 13*) works well. This can easily be altered later when the rhythm is established.

Additional instruments can be added by choosing them with the *Instruments Selector* and entering steps with the numbered buttons or in real-time with the *Trigger* button.

Accent Steps



An accented step increases the volume of all instruments on a step by an amount determined by the Main panel *Accent* knob . Accents are global; i.e. the volume of *all* instruments on an accented step is increased. Accent steps are added or deleted like any other instrument by selecting *Acc* with the *Instrument Selector* knob.

The **accent controls are fully explained** in the Main Panel Controls chapter.

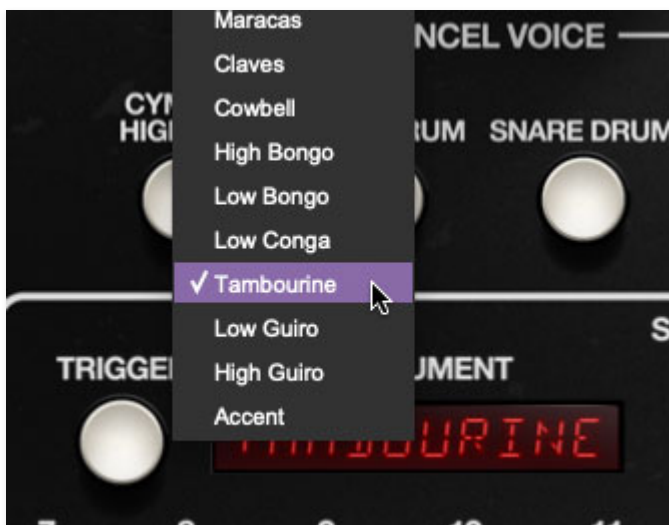
Step Button Controls



Here we'll cover the details of the controls in the bottom area when the User Play Mode is selected - there's some important info here, so we don't recommend skimming this section.

Trigger- This triggers currently selected *Instruments Selector* sound. If a pattern is currently playing, notes will be entered in the pattern buttons below, quantized to the nearest pattern step. **The *Trigger* button will not enter pattern notes when in *Song* play mode.**

Instrument display window- Indicates the instrument currently selected with the Instruments Selector dial. Included so you wouldn't need to remember what *CL* or *TMB* stands for. (We're pretty sure *TMB* is a rad MTV show starring that hunky Carson Daly, though.)



The current instrument can also be selected by clicking on the display window. The Instruments Selector knob will change to the appropriate position.

Step Buttons- These enable and disables pattern beat steps.

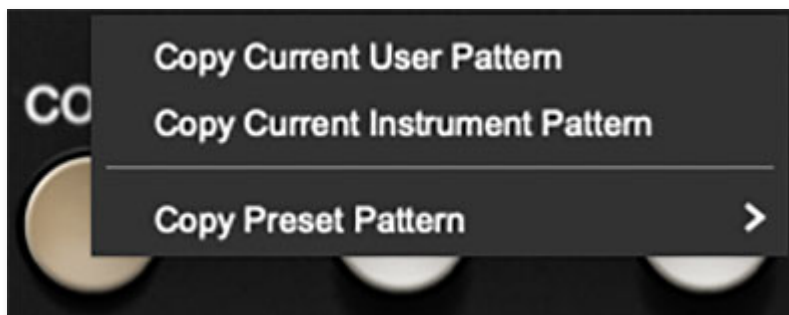
Subdivision- Ok, drum machining is about to get real here. We apologize.

A few of original CR-78 preset rhythms have a triplet or "swung" feel (*Waltz*, *Shuffle*, *Slow Rock*, *Swing*, and *Boogie*). That is, they're not 4/4 beats with

sixteenth-note resolution, and therefore cannot be correctly entered using the standard one-bar, 16-button classic 808-style interface.

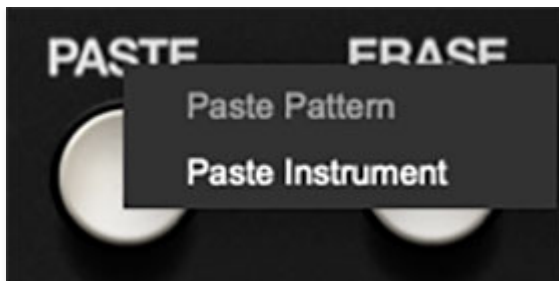
The original CR-78 master clock runs at 24 pulses per quarter note (PPQN) - in other words, it can have up to six notes in the space of a quarter note (i.e., six sixteenth notes), enabling the triplet/swung patterns mentioned above. We contemplated the idea of *always* displaying 24 buttons in *User* mode, but ultimately decided that the eight extra buttons would complicate the interface when working with standard 16-step 4/4 patterns. The *Subdivision* switch lets you choose, depending on song timing - set it to *4* when creating 16-step 4/4 patterns, or *6* when programming triplet/swung beats.

With that said, because we added a *Swing* button, it *is* possible to program simpler 4/4 beats (*Subdivision* switch set to *4*) and add a swing feel using the *Swing* button settings, but you'll probably want to take advantage of the *Subdivision 6* setting for full-on triplet-feel patterns (like "Hold The Line" by Toto, because who doesn't love that jam?).



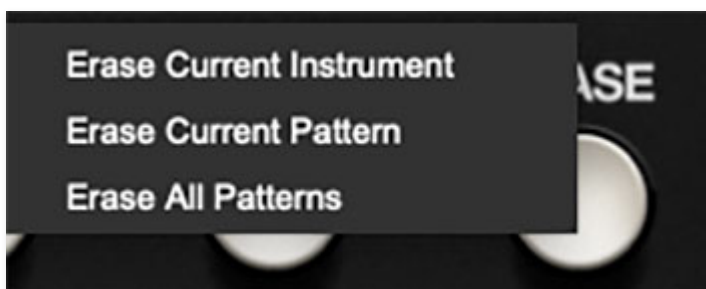
Copy- This allows duplication of entire patterns or single instruments from one *Pattern Select* number location to another. It's useful if you're assembling a song and want to create multiple variations of patterns.

- **Copy Current User Pattern-** Copies all instruments of the current user pattern into CR-78's memory buffer.
- **Copy Current Instrument Pattern-** Copies the steps of the instrument currently selected with the the *Instruments Selector* knob. This one is especially nifty because it lets you copy the steps of *any* instrument to any other instrument (using the *Paste* button *Paste Instrument* command) in any pattern. It's really useful for "doubling up" instruments.
- **Copy Preset Pattern-** Copies all instruments of the selected factory pattern into CR-78's memory buffer. This is useful if you'd like to modify elements of a factory pattern, or use one of them in Song mode.



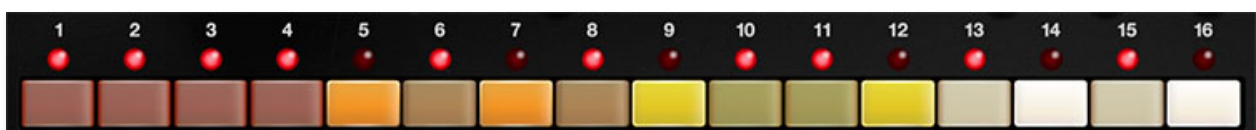
Paste- Allows pasting entire patterns or parts of patterns. Note that **pasting a pattern or single instrument will overwrite the existing pattern or instrument.**

- **Paste Pattern**- Pastes all instruments of the current pattern into the current pattern location.
- **Paste Instrument**- This pastes a single instrument into the current pattern location. Use the *Instruments Selector* knob to choose which instrument will be pasted. Multiple instruments can be pasted by selecting them consecutively with the *Instruments Selector* knob and repeatedly pasting.



Erase- This initializes either the entire pattern or individual instruments.

- **Erase Current Instrument**- Disables all steps of the instrument currently selected with *Instruments Selector* knob.
- **Erase Current Pattern**- Disables all steps for all instruments of the currently selected pattern.
- **Erase All Patterns**- Disables all steps of all patterns in the current patch (i.e. the patch selected in the top purple menu strip). Prior to this operation, CR-78 will display an "Are You Sure?" dialog to avert potential calamity.



Step Buttons (red/orange/yellow/white)- These enable and disable individual note steps in a pattern. Toggled buttons have a "pressed down" appearance, and the LED above will glow.

Multiple adjacent buttons can be enabled or disabled by dragging the mouse pointer across them - we're particularly fond of the this super-handly feature. It's also useful for disabling a button row even if some are on and some are off. And in case you missed it elsewhere, the *Cancel Voice* buttons operate the same way.



In addition to user pattern programming, Cherry CR-78 also includes a super easy-to-use song mode. In addition to the 99 user patterns discussed in the preceding chapter, each saved patch in the browser (purple menu strip at the top) includes a user-created song, i.e. a set of chained patterns. A song can be thought of a simple list of patterns to play, that might look something like this:

SONG STEP NUMBER	PATTERN
1	1
2	1
3	3
4	2
5	LP (loop)

A song can be up to 99 steps long.

Using Song Mode

Song mode can only be used with user-programmed patterns (*Play Mode* set to *User*). It does not work with the built-in preset patterns. If you'd like to use one of the preset patterns in a song, the factory buttons can be easily copied to user pattern locations with the *Copy* and *Paste* buttons, displayed when *Play Mode* is set to *User*.

At this point, we'll assume you have some user patterns programmed, so let's create a big CR-78 hit song:

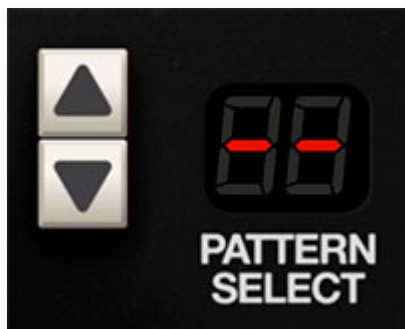


- Make sure *Play Mode* is set to *User*.
- Set the *Patt/Song* switch to *Song*
- The *Song Step Number* display (top number display) shows the current song step number; the *Pattern Select* display (bottom number display) shows the selected pattern number for the step.

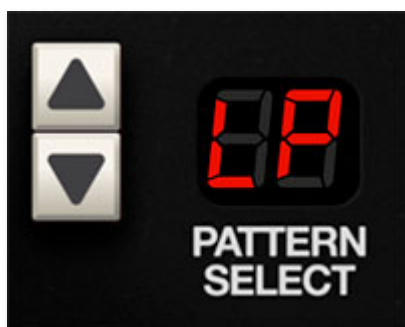
Select the desired pattern for step 1 number using up/down buttons beside the Pattern Select display, then click the up button beside the Song Step Num display to move onto the next song step. Select the pattern number for song step 2, repeat...

Special Song Step Types

Song mode includes the following useful special step types:



End Step- This stops song playback on the first beat of the bar. The end step can be selected by clicking the *Pattern Select* down arrow button a single time when the current selected pattern is 1. It appears as two dashes in the *Pattern Select* display.



Loop Step- Adding a loop step causes the song to jump back to the the beginning of song step number 1. Note that a loop step has no duration of its own - that is, the loop occurs immediately at the top of its song step. A loop step can be selected by clicking the *Pattern Select* down arrow button twice when the current selected pattern is 1. It appears as *LP* in the *Pattern Select* display.

Song Playback

Clicking the *Start/Stop* button begins or ends song playback. A song will always play back from the beginning - you'll see the *Song Step Num* display reset to step 1.

Playing Back Songs in a DAW



If the *Host Sync* switch is set to *Off*, CR-78 ignores DAW tempo, that is, it behaves as an independent entity.

When *Sync* is set to *Ext*, CR-78 will follow the DAW tempo and bar location. The only caveat to be aware of this your DAW has no way of knowing what time signatures you've used in CR-78. If all song rhythms are in standard 4/4, this most likely won't be a problem, but if you're using odd time signatures, you'll need to manually set your DAW's master time signature track to accommodate the length of the CR-78's song patterns, otherwise downbeats won't land on the first beat of bars in your DAW.

Please see the Host Sync section in **Main Panel Controls** for more information.

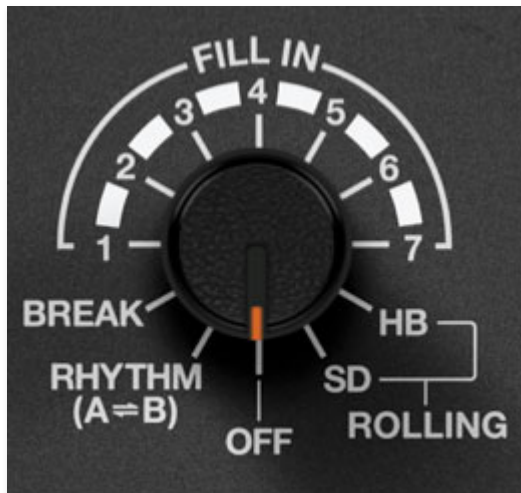


The Variation section adds preprogrammed fills to drum patterns. It helps to remember that the original CR-series drum machines were mainly intended as organ-top devices, to keep time while playing a syrupy instrumental version of The Carpenters "*Top of the World*" or some such. Thus, you might not use the Variation section fills that often (particularly if you're programming custom beats), but we've replicated the original CR-78 Variation section exactly, and they're actually kinda fun.

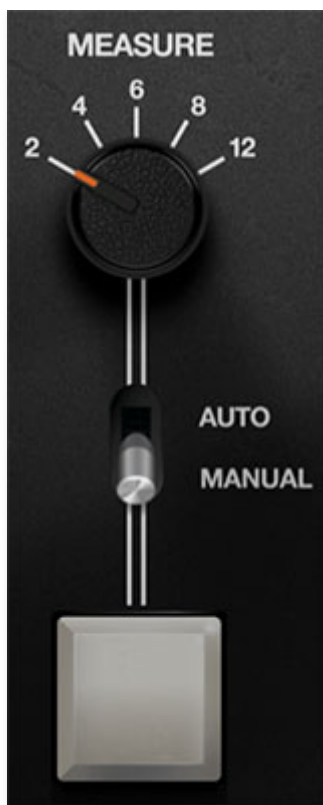
Fill In- The rotary dial selects which drum fill plays. Fills are one-bar in length (or occur at the end of a bar), and are designed to be compatible with particular preset patterns (generally because of their inherent time signatures). So if you decide to use one of the 3/4 fills while playing a 4/4 pattern, you might end up with... jazz (and everyone knows jazz is only for math teachers and the criminally insane).

IMPORTANT!- Variation fills can be used in ***Preset*** or ***User*** pattern play mode - Variations do not work while in ***Song*** mode. Variation controls will be dimmed and inactive when *Song* mode is selected.

Below we'll go over each one and indicate which preset patterns they play nicely with:



- **Off**- No fills occur in *Auto* or *Manual* mode.
- **Rhythm A>B**- Remember how each factory preset pattern includes an A and B variation? *Rhythm A>B* alternates to the opposing version for the fill bar. If the preset patterns *Rhythm* switch is set to the A position, the B variation plays for one bar when the fill is triggered, and vice-versa if the *Rhythm* switch is in the B position.
- **Break**- The first step of the pattern plays and the remaining steps are silent for one bar.
- **Fill In 1-7**- These are the various one-bar drum fills.
 - Fill In 1**- Intended for use with the *Waltz* preset patterns.
 - Fill In 2/3**- Intended for use with 3/4/swing preset patterns - *Shuffle*, *Slow Rock*, *Swing*, and *Boogie*.
 - Fill In 4/5/6/7**- Intended for use with 4/4 patterns, i.e. all factory preset patterns other than previously mentioned ones in this section.
- **Rolling/HB and SD**- The "rolling" fills are a little different - these play *in addition* to the the currently playing pattern. They're actually both the same, just with different instruments; they play 16th notes for the last two beats of a pattern using either the high bongo or snare drum sound. (For you new wave nerds, OMD's "*Enola Gay*" uses the *Rolling HB* fill at two-bar intervals.)



Measure, Auto/Manual mode, and trigger button- These controls determine when variations play.

- **Manual mode-** A fill occurs on the downbeat of the following bar after the big white button is clicked. **Fills will always begin on the downbeat of the next bar** - they will not occur in the middle of a bar.
- **Auto mode-** Fills occur at the interval defined by the *Measure* knob setting. Specifically, the fill begins at the top of the bar number selected. For example, with *Measure* set to *4*, the pattern will play through three times, then the fill plays on the downbeat of the fourth bar.

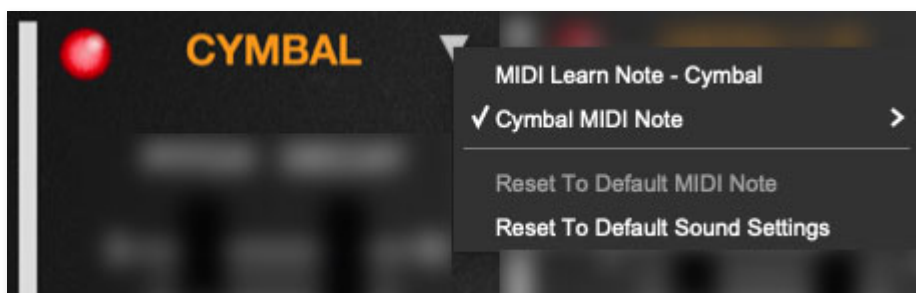
When *Auto* mode is selected, the manual fill trigger button is dimmed and inactive.



On the original CR-78, the drum voices were fixed and non-editable. Cherry Audio's CR-78 offers useful parameters that allow subtle or sometimes extreme modification of the stock sounds. We also included a shortcut to instantly return to "factory spec" voice parameters, in case you really louse things up!

Common Voice Edit Parameters

In addition to the parameter sliders, each voice includes:



LED Trigger lamp- These flash momentarily to indicate when a voice is triggered. If a voice LED flashes but you don't hear anything, make sure its corresponding *Level*/slider isn't set to zero on the *Effects/Mixer* page.

Accent Triangle Menu- The inverted triangle menu accesses couple of important and useful functions.

- **MIDI Learn Note - <instrument name>**- This enables custom MIDI note assignment. To assign a MIDI note, select the MIDI Learn Note menu; the white arrow begins to flash. Strike the MIDI key or button you'd like to assign. The arrows stops flashing and the note is assigned. **Custom note assignments are saved per patch** - they are not a global for all patches.
- **<instrument name> MIDI Note**- This displays a list of all MIDI notes with the currently assigned note highlighted. The MIDI can be "manually" reassigned by selecting any note from the popup menu.
Note: The Guiro voice includes separate *MIDI Learn Note* and *MIDI Note* menus its low and high voices.
- **Reset To Default MIDI Note**- Initializes the instrument to its default note setting as shown in the Default Voice MIDI Mapping table above.
Please check out the [Using CR-78 as a MIDI Sound Module](#) section for more information on default MIDI note assignments.
- **Reset To Default Sound Settings**- Initializes all voice edit sliders back to factory sound preset positions.

Individual Voice Edit Parameters

Each voice's parameters are described in the table below. Make sure to scroll down to the bottom for important info about the how the Metallic Beat *Link* buttons work, plus additional info about the Guiro, which operates slightly differently from the other instruments.

INSTRUMENT	PARAMETER	FUNCTION
BASS DRUM	Pitch	pitch of tonal element
	Decay	length of sound
	Click/Tone	tonal/transient element balance
	Click Bright	brightness of transient element
SNARE DRUM	Pitch	pitch of tonal element
INSTRUMENT	PARAMETER Decay	FUNCTION length of sound

	Click Level	volume of transient element
	Noise Color	highpass filtering of noise element
RIM SHOT	Pitch	pitch of tonal element
	Decay	length of sound
HIGH HAT	Pitch	pitch of tonal element
	Decay	length of sound
	Color	low/hi tonal element balance
	Ring	tonal element amount
CYMBAL	Pitch	pitch of tonal element
	Decay	length of sound
	Color	low/hi tonal element balance
	Stick	click level
METALLIC BEAT	Pitch	pitch of tonal element
	Decay	length of sound
	Link	SEE BELOW FOR EXPLANATION OF LINKING
MARACAS	Pitch	pitch of tonal element
CLAVES	Pitch	pitch of tonal element
INSTRUMENT	Decay PARAMETER	length of sound FUNCTION

COWBELL	Pitch	pitch of tonal element
	Decay	length of sound
HIGH BONGO	Pitch	pitch of tonal element
	Decay	length of sound
LOW BONGO	Pitch	pitch of tonal element
	Decay	length of sound
LOW CONGA	Pitch	pitch of tonal element
	Decay	length of sound
TAMBOURINE	Color	highpass frequency
	Decay	length of sound
GUIRO	Noise/Tone	noise/tonal element balance
	Color	highpass frequency

SEE BELOW FOR ADDITIONAL GUIRO INFORM



Metallic Beat / Link buttons- Metallic Beat is one of the quirkiest and not-self-explanatory features of the original CR-78. You can skip ahead a little if you don't want to delve into the nitty-gritty of vintage Roland synthesis, but trust us, all of this is relevant to how the *Link* feature works (and it's pretty interesting stuff anyway):

The later classic Roland analog drum machines (DR-110, TR-606, and TR-808) created cymbal sounds by combining the outputs of four to six atonally tuned square waves to create a random array of tonal harmonics, distorted them (for additional harmonics), then added some white noise, steeply highpass-filtered the whole mess, and then shaped the amplitude appropriately - short for high hats, longer for cymbal crashes, etc. (Not necessarily in that order, due to quirky VCA design, but we're speaking conceptually here.) The idea of using those atonal square waves was to approximate a cymbal sound with some tonal characteristics, as opposed to the non-tonal "swish" of white noise.

CR-78 cymbal synthesis is unique and a bit cruder; the bulk of the cymbal tones are created with resonant bandpass-filtered white noise. But here's where the unique part comes in - there's a slider on the front panel of the original CR-78 labeled *CY HH Metallic Beat*. This uses three square waves, atonally tuned, distorted, and filtered as described in the previous paragraph, to add a sharp metallic "clink" tone every time a high hat or cymbal sounds when the *CY HH Metallic Beat* slider is turned up. We believe this was intended to mimic the sound of the drum stick striking the ringy, inside bell area of cymbal. (As opposed to the xOx drum machines that use the square wave synthesis to create the main body of their sound.)

Stay with us here: **raising the *CY HH Metallic Beat* slider on the original CR-78 layers the metallic beat "clink" any time the high hat or cymbal sound is heard, with one exception.** If the *Cymbal/High Hat Cancel Voice* button is toggled, the metallic beat sound plays steady eighth-notes, regardless of what the cymbal and high hat pattern is currently playing. We're not sure why the original operates this way, but we think it might've been to provide a simple metronome function when the Cancel Voice button was toggled.

Of course we wanted to accurately replicate the original CR-78 functionality, so with the two preceding paragraphs in mind, **here's how the Metallic Beat *Link* function works:**

The Metallic Beat voice will trigger when either or both of the *High Hat* or *Cymbal* buttons are toggled. Both are on by default, but you'll need to turn

up the *Metal Beat* slider on the *Effects/Mixer* panel to hear it. We set it up this way to emulate how the original works, i.e. Metallic Beat always playing, but with its volume slider nominally turned off.

Unlike the original, Metallic Beat can be detached from the high hat and cymbal voices by disabling the *Link* buttons and programming it into user patterns like any other instrument. It can even be linked to high hat and cymbal hits *and* used as its own independent instrument simultaneously (don't worry, it won't "double trigger" if a hit lands on the same beat as a cymbal and a user-programmed step).

"Add Voice" Instruments

Similar to the original unit's *CY HH Metallic Beat* front-panel slider and always-playing-in-the-preset-rhythms implementation, the original included individual *Add Voice* section sliders for the Tambourine and Guiro instruments. The idea was that the user could add Tambourine and Guiro for extra pizzazz by raising their respective sliders while any of the preset rhythms played. In order to correctly replicate this, we recreated the Tambourine and Guiro programming for the preset patterns, but defaulted their volume sliders to zero on the *Effects/Mixer* page.

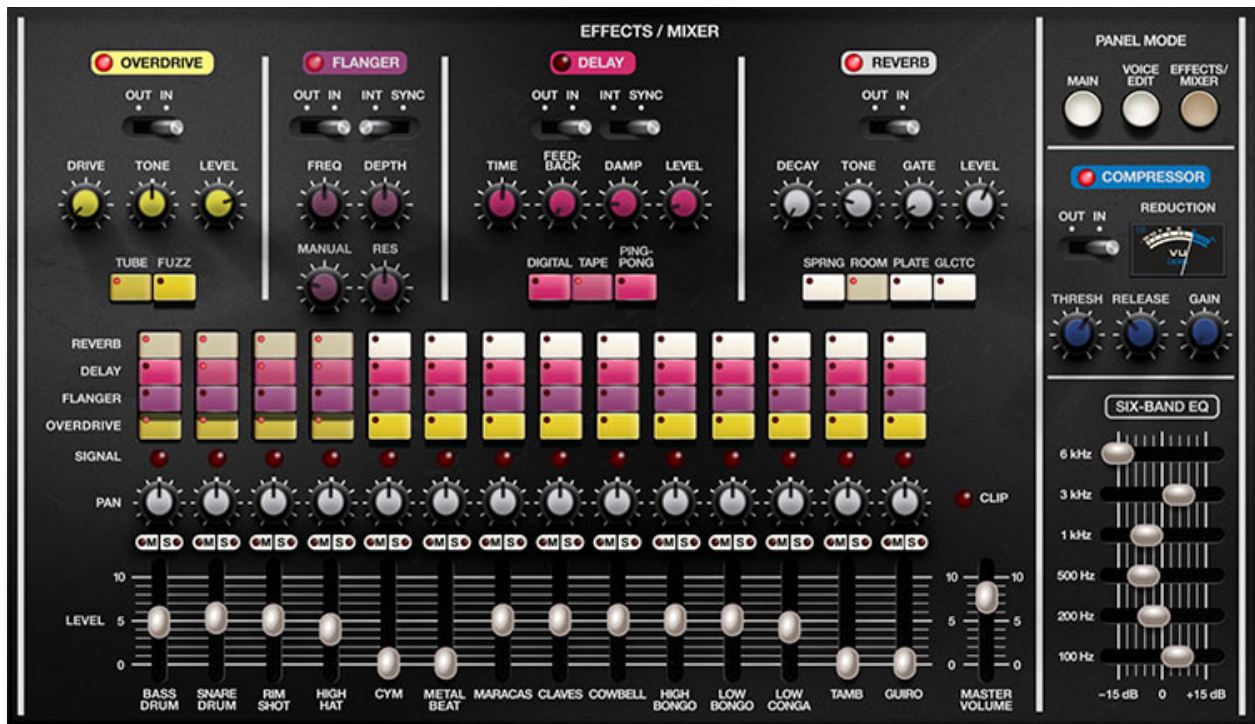
(Because Cherry CR-78 has a mixer panel with volume sliders for every voice, we've relocated the original unit's *CY HH Metallic Beat*, *Tambourine*, and *Guiro* sliders to the *Effects/Mixer* page.)

Tambourine- On original, this always plays straight eighth notes when the slider is raised. In fact, the eighth notes sound a little funny and polyrhythmical against the 3/4 factory preset rhythms. Don't ask us, that's how the original works!

Guiro- There are couple of unique things about the guiro as compared to other voices:

- Unlike all other voices, which sound for the same length of time regardless of tempo setting, the guiro's duration is tempo dependent - specifically, it plays for the exact length of a step, as determined by the tempo setting. If the guiro is programmed into multiple consecutive steps, it will sound continuously (i.e. legato).
- Distinct low and high guiro pitches are heard in the preset factory patterns. We actually split this into two separately programmable instruments in the step sequencer so users can program the "up" and "down" notes to their liking. However, there is only one guiro voice under the hood, and the Voice Edit parameters affect both voices.

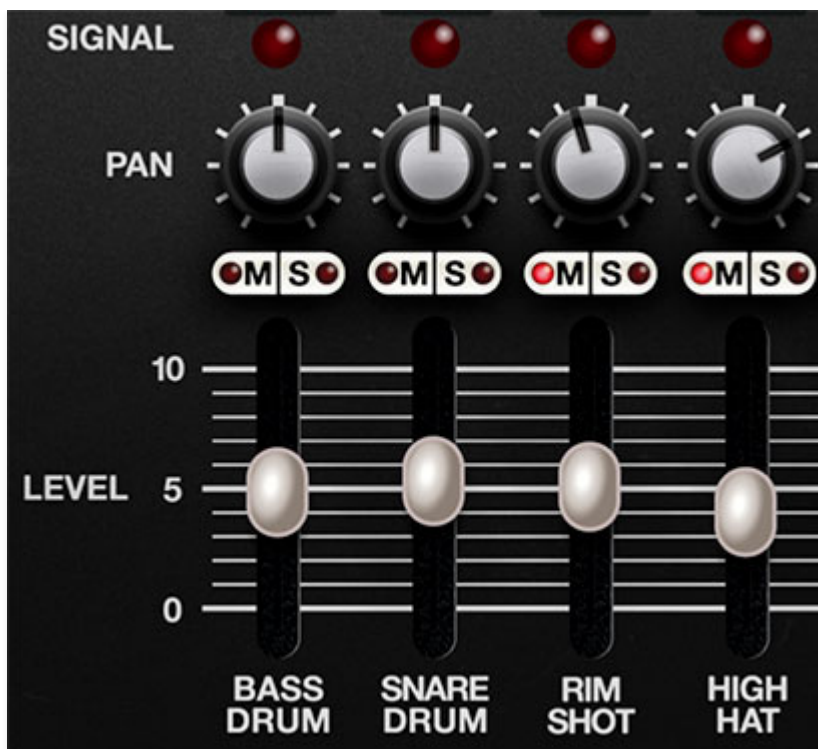
- Finally, if you are holding out for a guiro 'til the end of the night, then you are Bonnie Tyler, but instead of singing grandiose Meat Loafian' epics, you're actually in a Latin band.



The Effects/Mixer panel contains CR-78's four individual effects, a global compressor, a six-band EQ, and a mixer with volume, panning, and unique send buttons that allow easy assignment of effects to individual instruments. We'll start with the mixer at the bottom and move up through the effects:

Mixer Section

The original CR-78 didn't have a mixer for individual instrument levels. Cherry CR-78 adds a mixer with individual levels for every instrument. Note that **all mixer parameters are stored with patches**, so changing patches will change levels and other mixer parameters.



Level- Sets the volume for each individual instrument voice. *Master Volume* sets the total volume. Keep your eye on the *Clip* LED to prevent ugly digital distortion. (The overdrive and compressor effects are far more musical if you're seeking that kind of carnage.) The *Master Volume* and clip LED are the same as the ones on the Main panel, just duplicated for convenience.

M (Mute) / S (Solo) - These are standard mix mute and solo buttons, respectively. Their LED's will illuminate when engaged, and can be combined in any fashion. The *Solo* LEDs will flash when engaged - hopefully minimizing the occurrence of, "why-no-make-noise" scenarios.

Pan- All of CR-78's instruments are inherently mono; the Pan knobs set the position of the instrument in the stereo field.

Signal LED- These illuminate any time an instrument is triggered.



Effects Send Buttons (Overdrive/Flanger/Delay/Reverb)- These toggle buttons allow CR-78's effects to be applied to individual instruments **in any combination**. They operate much like using send knobs to route mixer channels to effects on bus inserts, but instead of sends level knobs, CR-78 uses buttons that send signal at "full blast." This configuration makes it really easy to, for example, add distortion to the bass drum, reverb to the snare, flanging to high hats, etc. We think you'll find that the buttons make it really fast and fun to use (as opposed to twirling 56 tiny send knobs!).

Effects

Overdrive



In/Out- Enables and disables overdrive effect. The LED in the name tab indicates current enabled or disabled status.

Drive- Amount of distortion.

Tone- This is a tilt-style EQ; rotating counterclockwise from center increases bass, rotating clockwise increases treble.

Level- Overall volume; this doesn't affect the amount of distortion. Because increasing drive amount causes an overall volume increase, *Level* can be used to balance things out.

Mode buttons- Sets overdrive type.

- **Tube**- This is the mellower distortion mode. Use it to add just little bit of vintage hair to sounds.
- **Fuzz**- Aggressive and raunchy vintage fuzz tone.

Flanger



In/Out- Enables and disables flanger effect. The LED in the name tab indicates current enabled or disabled status.

Sync- Engaging the *Sync* switch locks the flanger sweep time to master tempo. When engaged, the *Freq* knob snaps to note values ranging from 1/64th note triplet to 8 beats. *Sync* mode locks to the Main panel *Tempo* knob setting when using the CR-78 standalone version or the current project tempo when the plug-in version is used in a DAW.

Freq- Sets the modulation from 0.01-6 Hz speed. The *In/Out* LED flashes at the current mod rate.

Depth- Sets flange depth, i.e. the amount of modulation.

Manual- Sets the delay time length from 1-13ms. Shorter delay times result in more of a "jet passby" swoosh, particularly with *Res* at higher settings.

Res (Resonance)- Sets the amount of internal feedback for increased intensity.

Delay



In/Out- Enables and disables delay effect. The LED in the name tab indicates current enabled or disabled status.

Sync- Engaging the *Sync* switch locks the delay time to master tempo. When engaged, the *Time* knob snaps to note values ranging from 1/64th note triplet to 8 beats. *Sync* mode locks to the Main panel *Tempo* knob setting when using the CR-78 standalone version or the current project tempo when the plug-in version is used in a DAW.

Time- Sets delay time, from 1 to 2000 ms. If the *Sync* switch is enabled, time settings snap to synchronized note values. The *In/Out* LED flashes at the current mod rate.

Feedback- Routes the output to the input for additional repeats. Be careful at high settings as this can result in runaway feedback madness.

Damp- Attenuates high-frequencies as the knob amount is increased. Not only does this create more natural sounding decays, it also reduces the "stacking" effect that occurs with high feedback levels.

Level- Sets the volume of the delay echoes.

Mode buttons- Sets Delay type.

- **Digital**- Clean sounding digital delay.
- **Tape**- Reproduces the effect of a vintage "space echo" tape delay.
- **Ping-Pong**- Echoes alternate between audio channels.

Reverb



In/Out- Enables and disables reverb effect. The LED in the name tab indicates current enabled or disabled status.

Decay- Sets the length of reverb release time/size of room.

Tone- This is a tilt-style EQ; rotating counterclockwise from center increases bass, rotating clockwise increases treble.

Gate- This sets the threshold of the integrated noise gate. At full clockwise position, the gate effect is disabled. The gate threshold increases as the knob is rotated counterclockwise. This allows reverb tails to be abruptly chopped off for the reverb effects that launched a thousand 80s hits!

Level- Sets the volume of wet reverb signal.

Mode buttons- Selects reverb type.

- **Spring**- Recreates mechanical spring-reverb effect often seen (and kicked) in vintage guitar amps.
- **Room**- Recreates a vintage algorithmic-style medium room verb.
- **Plate**- A medium-to-large studio plate-style algorithm.
- **Galactic**- Cherry Audio's exclusive, giant, spacey reverb.

Compressor



Unlike the other effects the compressor effect is global for the entire instrument. It's intended to be used like a bus compressor, in order to "glue together" beats. Though it can be used subtly, the algorithm has a lot of personality, and can really smash things with low threshold and short release settings. In purely technical terms, it sounds bitchin'.

In/Out- Enables and disables compressor effect. The LED in the tab additionally indicates current enabled or disabled status.

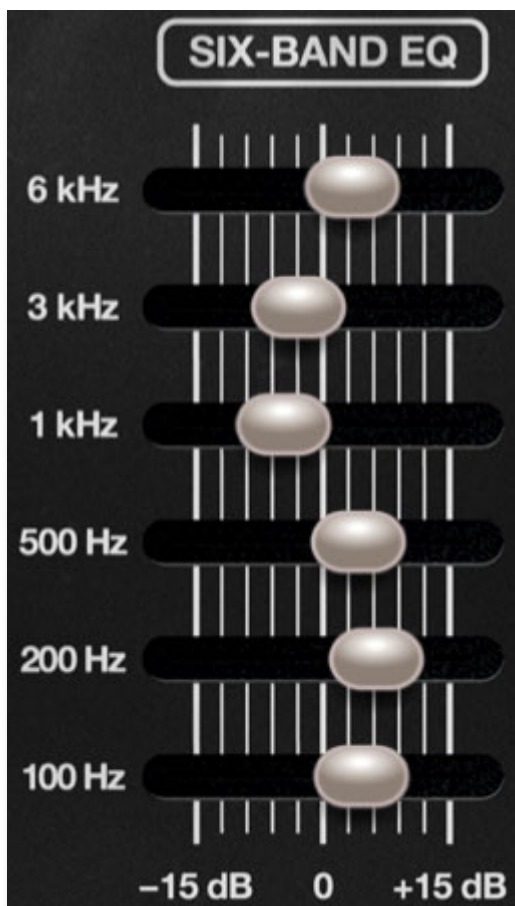
Reduction Meter- Shows the amount of compression applied. The needle nominally sits at zero dB, and moves to the left to indicate how much compression is occurring.

Thresh (Threshold)- Sets the amount of compression. At full clockwise position, no compression is applied; greater amounts of compression are applied as the knob is rotated counterclockwise.

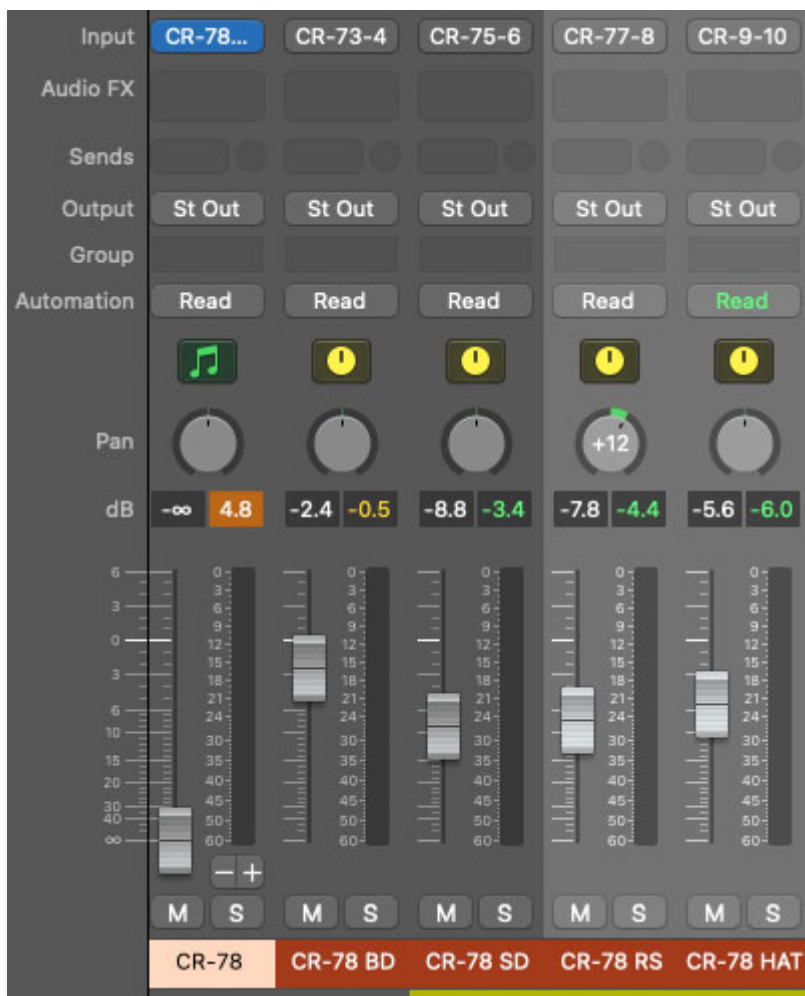
Release- The release knob sets how long it takes for the compressor to recover or "let go" of the signal. What you need to know is that longer release times (higher knob setting) are more gentle, and lower release times (low knob setting) result in more aggressive sounding drums (hooray!).

Gain- The most rudimentary explanation of a compressor is that it levels signal dynamics by making quiet signals loud, but in reality, it's reducing the volume of peaks. This results in an overall loss of signal level. The *Gain* knob introduces "make-up gain" in order to compensate for this loss of level. Its setting isn't critical, but the *In/Out* switch can be used to set the *Gain* control by comparing the relative level of un-effected vs. compressed signal.

Six-Band EQ



Like the compressor, the six-band EQ globally affects the entire instrument. Each of its horizontal sliders allows up to +/- 15 dB of gain at the frequencies displayed on the left side of the sliders. Center position for each band is off - you can quickly "zero" a slider by right-clicking and selecting *Return To Default Value* in the popup menu (this works for any control... in any Cherry Audio plugin).



CR-78 can be used in "multi-out" mode, meaning that each instrument sound can be routed to separate outputs within a DAW virtual mixer. This is useful for individual panning, using third-party effects plugins, or routing to separate physical outputs of a multi-output audio interface.

The procedure for configuring multi outs varies depending on which DAW you're using, so you may need to consult your DAW's owners manual, or find a YouTube video where some windbag yabs about nothing for six minutes and explains the actual procedure in the last 12 seconds of the video (Invariably, this video begins with, "Hey guys...").

Regardless of which DAW you're using, when loading/opening the CR-78 instrument plug-in, select the *CR-78 Multi Out* version.

CR-78 Multi Out Configuration

Stereo Mix outputs 1-2 operate exactly the same as the standard stereo version of CR-78, that is CR-78's onboard mixer section controls and onboard effects will all operate as usual. **We recommend turning the stereo mix DAW fader (the mixer channel with the CR-78 instrument) down to**

zero when using separate outputs, because mixing the instrument stereo outs with separate outs can get confusing.

The remaining individual instrument outputs are pre-mixer fader; in other words, they're unaffected by the onboard mixer's *Level* and *Pan* controls, and CR-78's onboard effects are *not* applied. Though the individual outs will show as stereo pairs, all of CR-78's individual instruments are inherently mono.

CR-78 Multi Out's separate outputs are configured as follows:

STEREO MIX	1-2
BASS DRUM	3-4
SNARE DRUM	5-6
RIM SHOT	7-8
HIGH HAT	9-10
CYMBAL	11-12
METALLIC BEAT	13-14
MARACAS	15-16
CLAVES	17-18
COWBELL	19-20
HIGH BONGO	21-22
LOW BONGO	23-24
LOW CONGA	25-26
TAMBOURINE	27-28
LOW/HIGH GUIRO	29-30

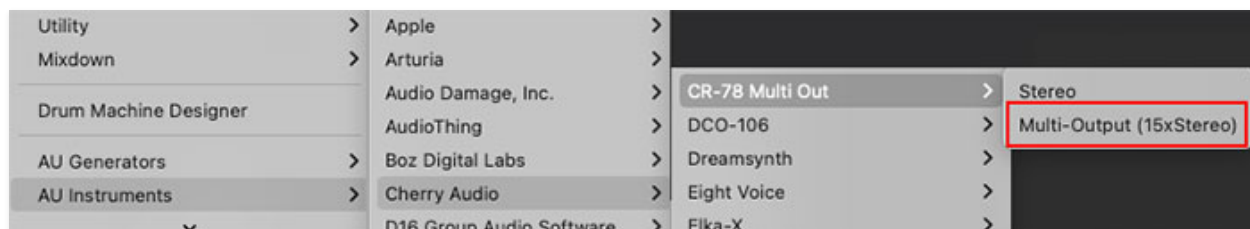
Using CR-78 Multi Out in Logic Pro

Configuring multi out instruments in most DAWs is relatively easy, but it's a little dicier in Logic. Essentially, you'll need to create mixer auxiliary channel strips to route separate outputs. An aux mixer channel is the same thing you'd use when adding a bus effect (for example, if you were routing multiple sources to a single reverb effect), but instead of setting the aux's input to a

"bus" selection in its popup menu, you'll set it to one of CR-78's individual audio outputs.

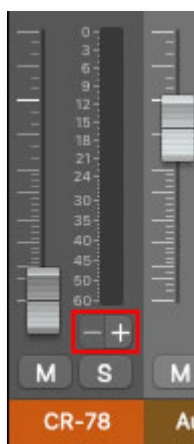
If you know your way around Logic's mixer, these can be configured manually, but Logic Track Mixer multi out instrument channel strips have an easy-to-overlook shortcut that simplifies the process.

For this example, we'll assume you're using the Logic Track Mixer, as opposed to the old-school Logic Environment Mixer.



Open an instance of CR-78 in a DAW instrument channel; make sure to select *CR-78 Multi Out*.

Open the Track Mixer either by clicking the mixer button in the top left of the menu strip (this may or may not be present depending on your Logic header setup), or with the top menu *View>Show Mixer*.



In the main CR-78 instrument mixer channel strip, click the **+** button beneath the output meter to add aux channel strips. Repeat this step for each separate out you'd like to use. It should look like the image below.

The aux channels default names will be something like *Aux 1*, *Aux 2*, etc.; in the image below, we've double-clicked and renamed them to match each instrument out.



The aux channel strips can now be used to individually set volume and panning, and third-party effects can be added either to the individual out aux channel strips, or by inserting effects to additional aux channels and using the individual out aux channel strip send knobs. This is the most flexible approach, because it allows independent volume and panning adjustment of dry and effect signals. Note that although CR-78's instruments are all inherently mono, the aux buses will show up in stereo. For best results, we recommend leaving them in stereo mode (otherwise panning can get kooky).

The aux channel inputs (i.e. instrument outputs) can also be reassigned by clicking the inputs buttons and selecting a different CR-78 source (i.e. instrument):



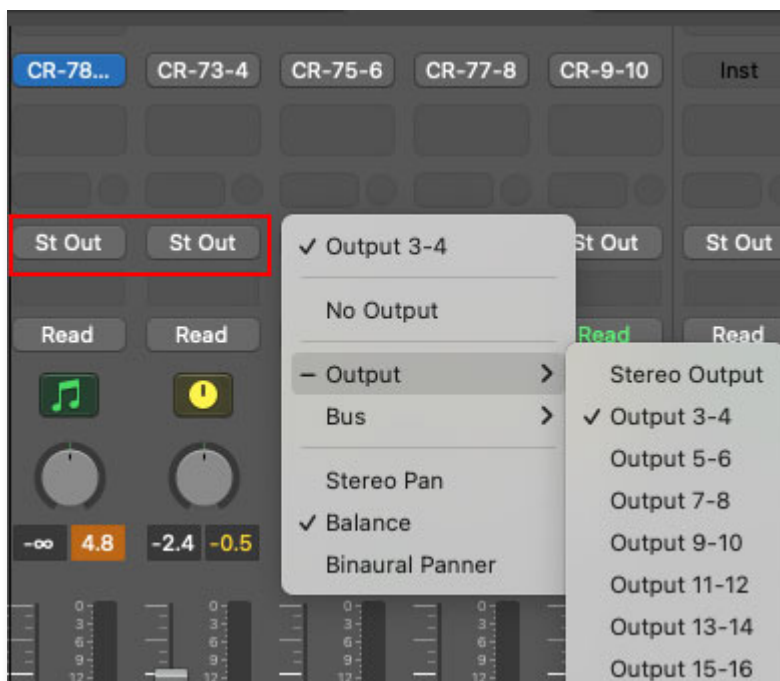
This opens the input popup selector:



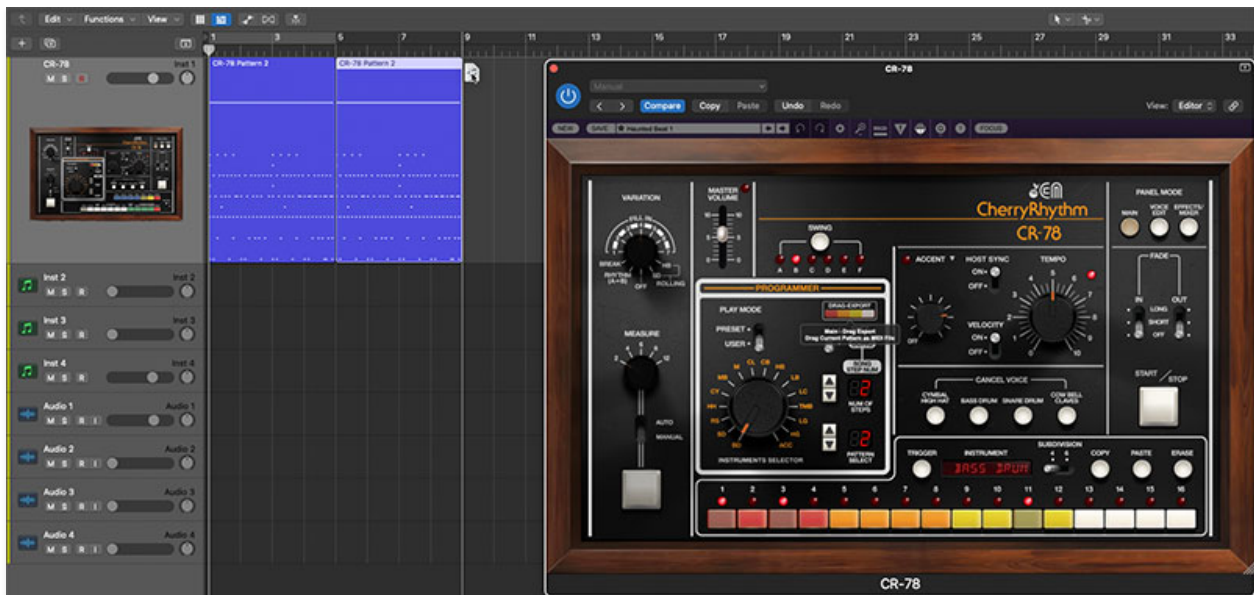
We know the names are a little cryptic; unfortunately Logic doesn't allow us to give them custom names on the programming side. Below is a table showing each instrument and its seven-character Logic aux in selector name:

INSTRUMENT	LOGIC AUX BUS NAME
BASS DRUM	CR-73-4
SNARE DRUM	CR-75-6
RIM SHOT	CR-77-8
HIGH HAT	CR-79-10
CYMBAL	CR11-12
METALLIC BEAT	CR13-14
MARACAS	CR15-16
CLAVES	CR17-18
COWBELL	CR19-20
HIGH BONGO	CR21-22
LOW BONGO	CR23-24
LOW CONGA	CR25-26
TAMBOURINE	CR27-28
LOW/HIGH GUIRO	CR29-30

Routing Instruments To Separate Audio Interface Physical Outputs



By default, all mixer channels and aux busses sum to Logic's master stereo outputs. To send CR-78's individual outputs to separate physical outputs on a multi-out audio interface, click the *Outputs* buttons on the individual out aux channel strips (these will say *St Out* by default), scroll down, and select the desired *Output* or *Bus* destination.



If CR-78 is being used in a DAW, you may want to forego its internal pattern and song programming and instead use the DAW for programming and playing MIDI notes. This might be a little less fun than clicking 16 (or 24) colorful buttons on and off, but it allows far more flexibility in terms of note placement/quantization and velocity.

No special setup is required as CR-78 always responds to incoming MIDI note data from a MIDI/USB controller or the DAW itself, but there are a few things to be aware of.



Host Sync

Make sure that *Host Sync* on the Main panel is set to *Off* to prevent the internal pattern sequencer from playing back when DAW play is initiated.

Velocity

- **Off**- When the *Velocity* switch is in the *Off* position, all notes will play at full volume regardless of their velocity values. If the accent note is currently "playing" (note on), all instrument sounds will play at the increased volume set with the *Accent* level knob. Use the *Off* position for most realistic "old-school" vibe.
- **On**- Setting *Velocity* to *On* causes notes to respond to the entire velocity range of 0-127 for fully controllable dynamics.

Transferring CR-78 Patterns to a DAW using Drag Export

The *Drag Export* function on the *Main* panel makes it really easy to copy patterns to a DAW. Simply click and drag the *Drag Export* button array to the desired position in the CR-78 instrument DAW timeline/grid (you can also drag to your computer's desktop to create Standard MIDI file - pretty cool, huh?).

Keep in mind that *Drag Export* works for preset and user patterns or entire songs. It even works properly if two simultaneous preset patterns have been selected (using SHIFT-click).

When playing back the newly created MIDI clip, make sure to set *Host Sync* to the *Off* position, otherwise the pattern will simultaneously play from CR-78's sequencer *and* the DAW, and no one wants that kind of havoc.

Default Voice MIDI Mapping

The onboard instrument default MIDI notes assignments are shown in the table below. We mostly stuck to Standard MIDI drum mapping, but a few were changed in order to avoid three octaves jumps for some of the percussion voices. The good news is that MIDI note assignments are easily custom editable; more about this below the table.

INSTRUMENT	MIDI NOTE NUMBER	KEYBOARD KEY
BASS DRUM	36	C2
SNARE DRUM	38	D2
RIM SHOT	37	C#2
HIGH HAT	42	F#2
CYMBAL	49	C#3
METALLIC BEAT	44	G#2
MARACAS	51	D#3
CLAVES	39	D#2
COWBELL	52	E3
HIGH BONGO	45	A2
LOW BONGO	43	G2
LOW CONGA	41	F2
TAMBOURINE	46	A#2
LOW GUIRO	48	C3
HIGH GUIRO	50	D3
ACCENT*	40	E2

*Accent isn't an instrument per se, but it is triggered and programmed on a per-step basis like any other instrument. Please see the **Main Panel**

Controls section for more information on the Accent function.

Assigning internal and external hardware controls adds a whole new dimension of control and musicality to CR-78, and it's really easy to do. The MIDI Tab is where all controller assignments can be viewed and tweaked. First we'll show how to assign an external hardware controller to a CR-78 control, then we'll go over all parameters in the MIDI Tab.

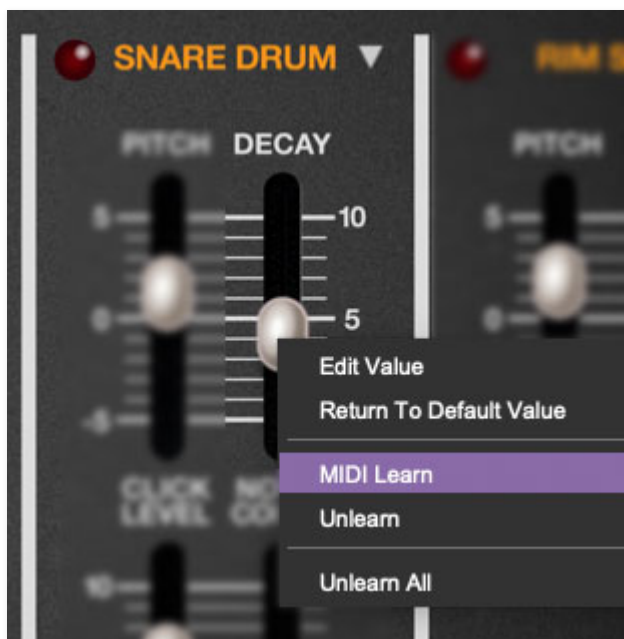
Basic External Hardware Control Assignment

This is the quick, "I just want to assign a hardware control right now!," section. We recommend reading this whole section to best take advantage of MIDI control assignments.

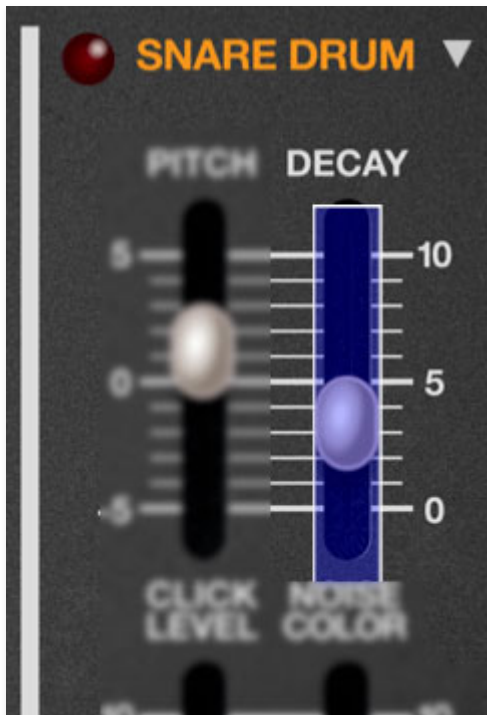
In this example, we'll assign a hardware slider/knob control to the Snare Drum *Decay* slider on the Voice Edit page.



First, make sure you're on the Voice Edit page by clicking the *Voice Edit* button in the top-right corner.



In the Snare Drum section, right-click anywhere on its *Decay* slider, and select *MIDI Learn* in the popup menu.

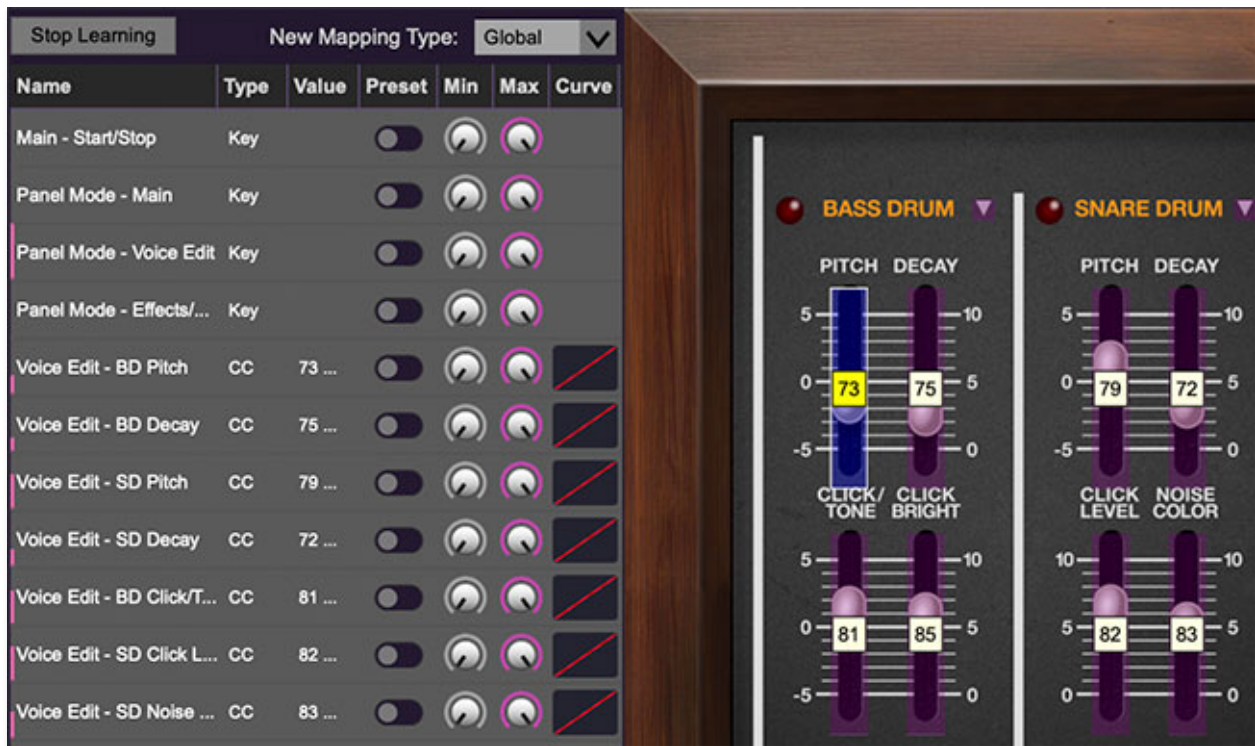


A transparent purple overlay appears over the slider indicating that it's in learn mode. Now move the desired hardware control device. The purple overlay disappears and the hardware control will move the *Decay* slider. If you get cold feet (or accidentally put the wrong control into learn mode), learn mode can be aborted by right-clicking and selecting *Stop Learning*.

This is the basic procedure for assigning hardware controllers to almost any control.

Once a MIDI controller has been assigned, in addition to real-time control of any parameter, you'll also be able to record and play back controller data from a DAW.

The MIDI Tab



This is command central for all MIDI controller assignments. Here you'll be able to fine-tune and see information about all currently assigned controllers.



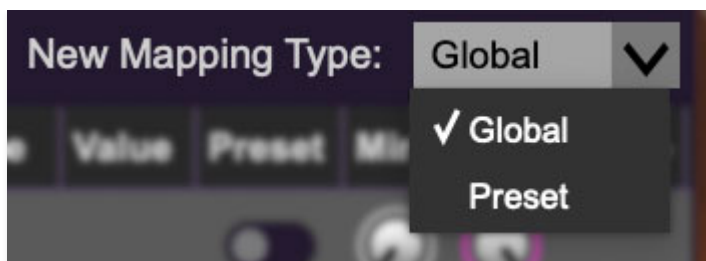
To view or hide the MIDI Tab, click the *MIDI* button in the purple top toolbar.

MIDI Learn		New Mapping Type:		Global			▼
Name	Type	Value	Preset	Min	Max	Curve	
Main - Start/Stop	Key		<input type="checkbox"/>	<input type="range"/>	<input type="range"/>		
Panel Mode - Main	Key		<input type="checkbox"/>	<input type="range"/>	<input type="range"/>		
Panel Mode - Voice Edit	Key		<input type="checkbox"/>	<input type="range"/>	<input type="range"/>		
Panel Mode - Effects/...	Key		<input type="checkbox"/>	<input type="range"/>	<input type="range"/>		
Voice Edit - BD Pitch	CC	73 ...	<input checked="" type="checkbox"/>	<input type="range"/>	<input type="range"/>		
Voice Edit - BD Decay	CC	75 ...	<input checked="" type="checkbox"/>	<input type="range"/>	<input type="range"/>		
Voice Edit - SD Pitch	CC	79 ...	<input checked="" type="checkbox"/>	<input type="range"/>	<input type="range"/>		
Voice Edit - SD Decay	CC	72 ...	<input checked="" type="checkbox"/>	<input type="range"/>	<input type="range"/>		

MIDI Learn button- This is almost exactly the same as enabling MIDI learn mode by right-clicking a control. Click the *MIDI Learn* button to enter learn mode (all controls turn purple). Unlike right-clicking on specific controls, where CR-78 automatically exits controller assignment mode, clicking the *MIDI Learn* knob "stays on" to enable assignment of multiple hardware controls. This is handy for quickly assigning a bunch of sliders or the buttons of a grid-style controller.

To assign multiple controls, click *MIDI Learn*, click an on-screen control, move the desired hardware knob or slider, continue clicking and assigning on-screen controllers until all desired controls are assigned, then click *Stop Learning* to exit learn mode.

Remember that a single hardware knob/slider/button isn't limited to controlling just one parameter - a single hardware controller can simultaneously operate as many controls as you'd like.



New Mapping Type- This popup menu selects whether newly assigned MIDI mappings will be global (affects all sounds and doesn't change when different presets are selected) or saved with individual presets.

MIDI Tab Columns

Name	Type	Value	Preset	Min	Max	Curve
Voice Edit - BD Pitch	CC	73 ...	<input checked="" type="checkbox"/>	<input type="range"/>	<input type="range"/>	
Voice Edit - BD Decay	CC	75 ...	<input checked="" type="checkbox"/>	<input type="range"/>	<input type="range"/>	

Name- Displays the name of the parameter being controlled.

Type- There are five possible types of controller automation:

- **Note**- Notes played on a MIDI keyboard controller, expressed as C-1 to G9
- **CC (MIDI Continuous Controller)**- The standard 128 MIDI controller numbers as defined in the MIDI spec. More specifically, these are the controllers transmitted by hardware knob and slider controls. MIDI CC's can be used to control parameters in real-time or recorded and played back within DAW software.
- **MMC (MIDI Machine Control)**- The MIDI control protocol for tape machine-style transport controls. Back in the dark ages, this was used to control wonky old Tascam and Fostex reel-to-reel monsters, but it's useful if your MIDI controller has tape-style transport control buttons.
- **Aftertouch**- Besides sounding like a 1981 Melissa Manchester record, some keyboard controllers transmit controller data when keys are pressed and released as they're held down. The vast majority of keyboard controllers with aftertouch transmit "mono" aftertouch only; in other words, aftertouch data is the sum of all keys to one single data stream.

- **Key**- This allows keys of the computer QWERTY keyboard to act as button controls for onscreen controls.

Value- Displays the specific automation controller. In the case of a *Note* this would show a MIDI note number (C-1 to G9, for a MIDI CC, this would be the MIDI CC controller number, etc. Clicking on the value opens a pop-up menu where all values are displayed and can be selected.

Preset- This slider works in conjunction with the *New Mapping Type* menu. In the left position (gray background), the MIDI mapping is global (affects all sounds and doesn't change when different presets are selected), in the right position (lavender background), the MIDI mapping is saved with, and only affects the current sound preset.

The *Preset* switch is super nifty, because it means MIDI mappings can easily be set to global or per-preset status at any time. (A lot of folks asked us for this feature.)

Min- Sets a limit on the lowest value any automation control can set a mapped controller to. This actually recalibrates the range of the automation controller to the remaining parameter range.

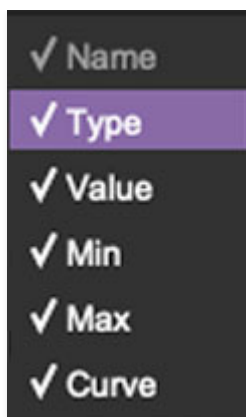
Max- Sets a limit on the highest value any automation control can set a mapped controller to. This actually recalibrates the range of the automation controller to the remaining parameter range.

- ***Super Tricky Min-Max Tricks***- Not only can parameter ranges be limited via the the *Min* and *Max* knobs, mapped control destinations can be completely inverted by setting the *Min* knob all the way up and the *Max* knob all the way down (or anywhere in between).

Limiting and inverting parameter ranges with the *Min/Max* controls is particularly useful when multiplexing a single hardware control to operate multiple parameters. Along with the *Curve* control, the customization possibilities are super flexible.

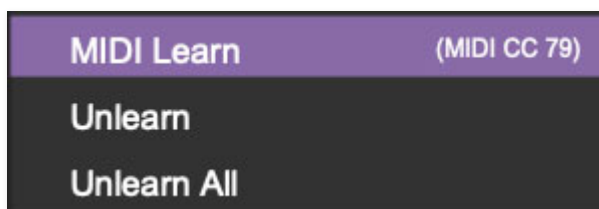
Curve- These allow the customization of how incoming MIDI CC controls affect the movement of onscreen controls, ranging from exponential to linear to logarithmic curves.

MIDI Tab Column Configuration Right-Click Menus



Right-clicking anywhere in the top row (*Name, Type, Value, etc.*) displays the column configuration menu. Checking/unchecking these allows hiding and display of each column. This has no effect on assignments.

MIDI Tab Parameters Right-Click



Right-clicking on an assigned parameter opens the menu above.

MIDI Learn- This is used to change the controller assigned to a particular parameter.

Unlearn- Deletes the selected automation parameter.

Unlearn All- Deletes all controller assignments for the patch. A warning dialog pops up prior to deletion in order to thwart potential unlearn-related disasters.

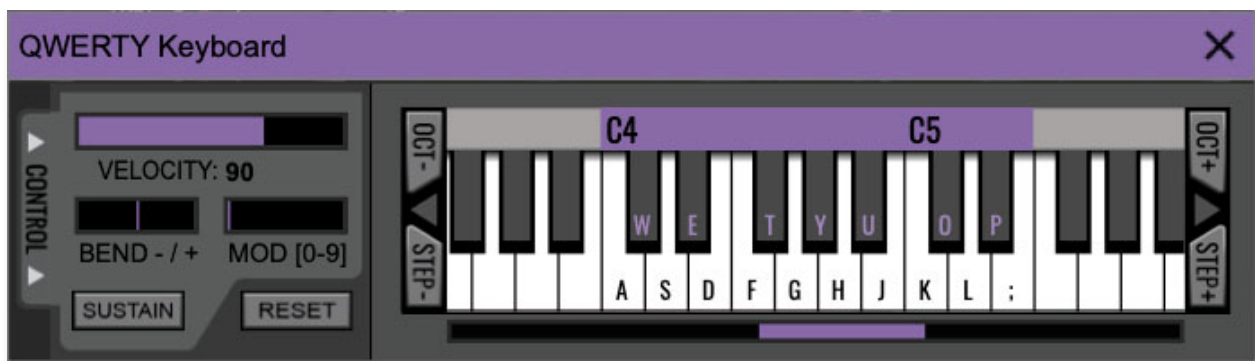
MIDI Controller Suggestions

Following are some MIDI controller assignments we find particularly useful:

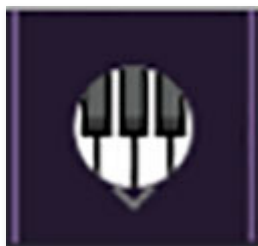
- Assigning button controllers to the Panel Mode Main, Voice Edit, and Effects/Mixer select buttons lets you rapidly switch between CR-78's three UI windows. Though you can use a MIDI/USB controller buttons or keyboard keys, we like using the keypad 1/2/3 buttons on the computer QWERTY keyboard. The only caveat to using QWERTY keys is that some

DAWs get finicky about QWERTY key priority with plugins (and by "some," we mean Logic...).

- Similar to above, assigning button controllers to the *Cancel Voice* buttons makes it really easy to experiment with muting instruments.
- Assigning the QWERTY keyboard space bar (or any other external controller button) to the *Start/Stop* button is very useful because it lets you start and stop patterns without having to return to the Main UI page.
- Try assigning a button or any keyboard controller key to the *Trigger* button when creating patterns in User mode. This is nice, because CR-78 "records" hits into the current pattern while in play mode.



If you don't have a MIDI keyboard attached to your computer, the standard QWERTY computer keyboard can be used to play notes - we're pretty sure you've got one of those! We'll refer to this as the "MTK." Following is a list of MTK keyboard modifiers and functions:



Opening and Closing the MTK - click the the circular keyboard icon in the top toolbar. To close the MTK, click the keyboard icon in the top toolbar, or click the X in the top right corner.

Play Notes- To trigger notes, simply press the corresponding computer keyboard key or mouse click the onscreen keys.

Adjust Currently Visible MTK Range- Slide the purple scroll bar horizontally to adjust the currently visible keyboard range.

Adjust Overall Visible Keyboard Range- Clicking and dragging the right edge of the MTK window allows the overall size of the window to be adjusted. This lets you view more or less of the onscreen keyboard. Note that the MTK window's borders cannot exceed the overall outside dimensions of the MG-1 Plus window.

Shift Range Up/Down Octave- Click the *OCT-* and *OCT+* buttons at the top left and right of the onscreen MTK. The current range is displayed above the keyboard. **CR-78's C2-C3 default MIDI note assignments fit perfectly into the MTK keyboard's default range setting.**

Shift Range Up/Down Semitone- Click the *STEP-* and *STEP+* buttons at the bottom left and right of the onscreen MTK. The current range is displayed

above the keyboard.

Hide/View Controllers- Clicking *CONTROL* at the far left hides and displays velocity, bender, mod, and sustain control parameters. Hiding the control view makes more space available for the keyboard.

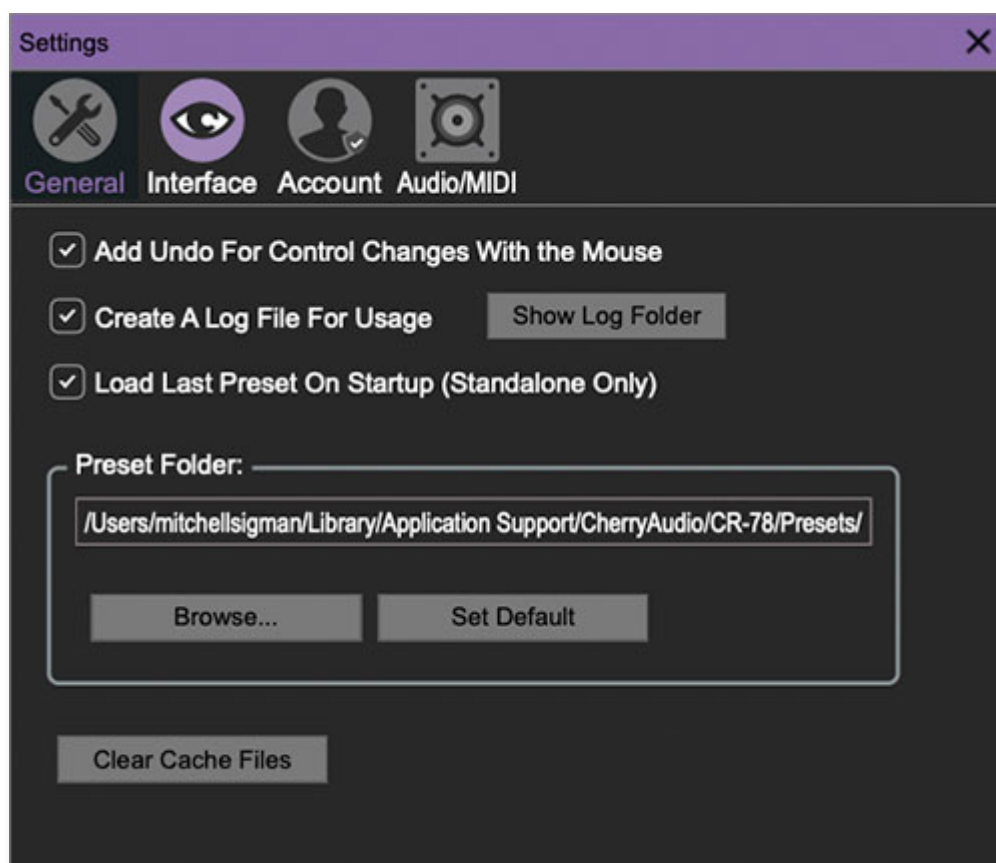
Mod Wheel- To add mod wheel modulation, press the number keys from *0-9* (above the character keys) while playing a note. The modulation amount will vary from none (*0*) to full modulation (*9*). Note that modulation will "stick" at the selected number; to disable modulation, click the *0* key. Mod can also be engaged by clicking the mouse in the mod bar area. (Mod Wheel doesn't affect any CR-78 parameters by default, but it can be used as a MIDI control source for any control. For more information about assigning MIDI controls, please see **MIDI Controllers Setup and The MIDI Tab** section.)

Reset- Initializes all MTK parameters including keyboard range and control parameters.

Settings

Clicking the settings gear opens a window with multiple tabs for configuring various "under-the-hood" settings. These are mostly set-and-forget kind of parameters - all the controls you'll use frequently are on the Main, Voice Edit, and Effects/Mixer panels.

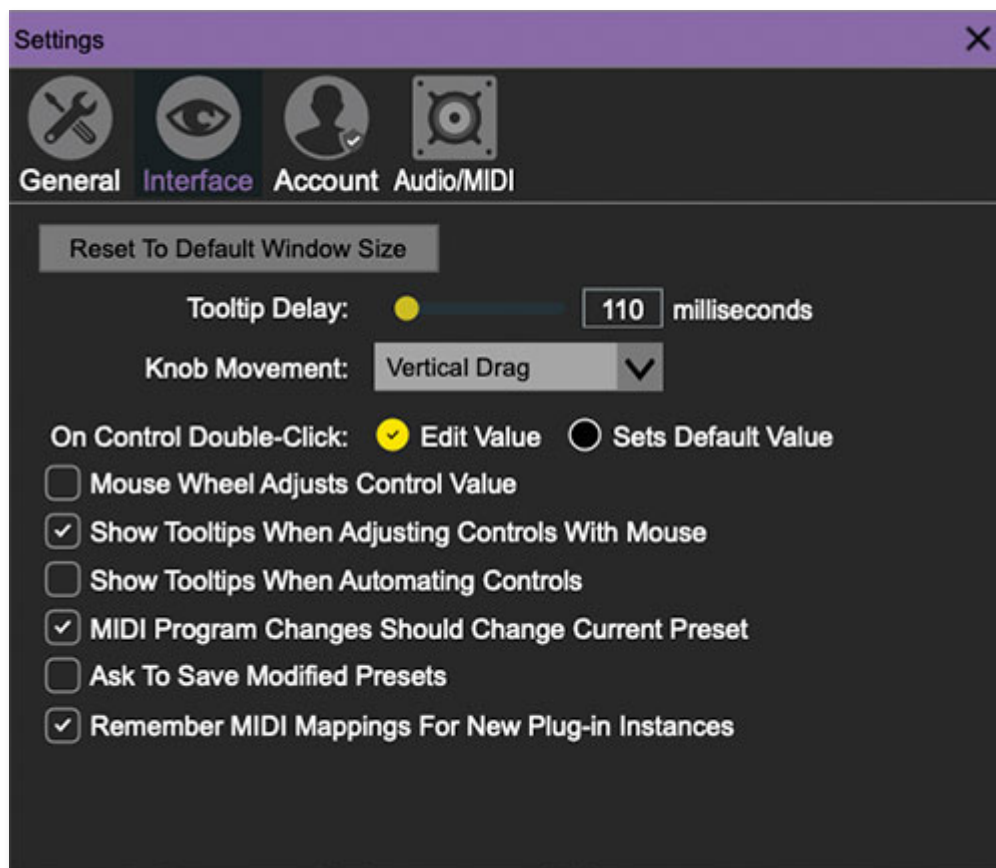
General



- **Add Undo For Control Changes With the Mouse**- Enabling this allows undo of knob/slider/button adjustments. You'll want this on if you want the ability to undo all aspects of patch editing and programming.
- **Create A Log File For Usage**- This creates a text doc of all internal and routines during use. It is mainly intended for our tech staff should you experience any issues. Clicking *Show Log Folder* opens the folder containing CR-78 log file docs.
- **Load Last Preset On Startup (Standalone Only)**- Automatically loads the last preset used when the standalone version is started.

- **Preset Folder-** Displays the current location of sound presets. This can be changed by clicking and typing in the field.
 - **Browse...** - Displays the current location of preset folder in the file manager.
 - **Set Default-** Sets the current displayed *Preset Folder* path as the default location
- **Clear Cache Files-** Deletes all log files, temporary patches, and the image cache.

Interface



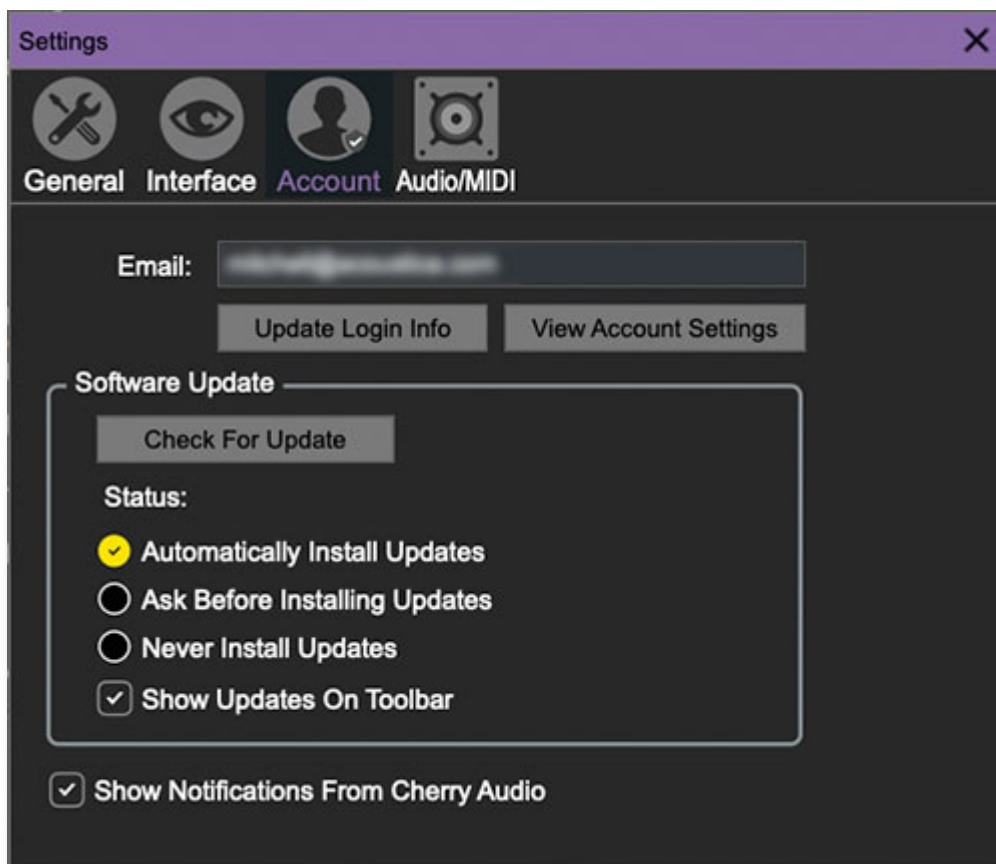
Allows customization of user interface settings.

- **Reset To Default Window Size-** Resets the workspace to default size. Use this to reset the window size if the window somehow becomes too large for your display and can't be resized.
- **Tooltip Delay-** Tooltips are those informative bits of text that pop up when hovering over a control (go ahead and try it, we'll wait...). The *Tooltip Delay* setting defines how long you must hover before the tooltip

pops up. You might want to set it to a faster time than default if you're one of those highly caffeinated, impatient types (e.g., me).

- **Knob Movement-** Defines which how mouse movements related to turning onscreen knobs. It defaults to *Vertical Drag*, but can be changed to *Horizontal Drag*, or *Rotary Drag* if you're one those folks that cut their teeth on the *Steinberg Model E VST* back in 2000.
- **On Control Double-Click-** Defines what happens when the mouse is double-clicked on a control. If *Edit Value* is selected, an exact number can be entered by typing the number and hitting [ENTER] or [RETURN]. If *Sets Default Value* is selected, double-clicking a control resets it to its default value.
- **Mouse Wheel Adjusts Control Value-** Enabling this lets you adjust knob, slider, and switch values by moving the mouse wheel. This works great with a standard mouse wheel, but you'll want to disable it if you're using an Apple Magic Mouse (which will move the control AND scroll the window).
- **Show Tooltips When Adjusting Controls With Mouse-** Displays parameter tooltips/values when the mouse is hovered over a control or as a control is moved with mouse clicked.
- **Show Tooltips When Automating Controls-** Displays parameter tooltips/values next to controls any time a control is changed, i.e. if a control is moved via an assigned MIDI controller or a *Perform* panel knob, etc.
- **MIDI Program Changes Should Change Current Preset-** Allows MIDI program change messages to change CR-78 patches.
- **Ask To Save Modified Presets-** This opens a dialog window asking if you'd like to save changes if a patch has been edited and a new patch is selected. If you're the type that likes to click through presets and tweak a control here and there, it can be annoying to have a window pop-up asking if you'd like to save every time you switch presets - if you're that person, keep this off.
- **Remember MIDI Mappings For New Plug-in Instances-** When enabled, all global MIDI Tab controller settings are stored and apply to new instances.

Account



Settings for personal login information and account.

- **Email**- Displays the email address of the current login.
- **Update Login Info**- Clicking this opens the same email and password login screen you'll see when initially launching.
- **View Account Settings**- This opens your personal account page on the Cherry Audio Store website containing information about modules purchased and more.

Software Update

- We often fix bugs and make improvements; below are options defining how CR-78 handles updates.
 - **Check For Update**- Click this to see if an updated version is available.
- Status-**
- **Automatically Install Updates**- Updates are automatically downloaded and installed.
 - **Ask Before Installing Updates**- By default, updated versions automatically download when available. Checking this box defeats automatic updates and will ask if you'd like to install updates when they

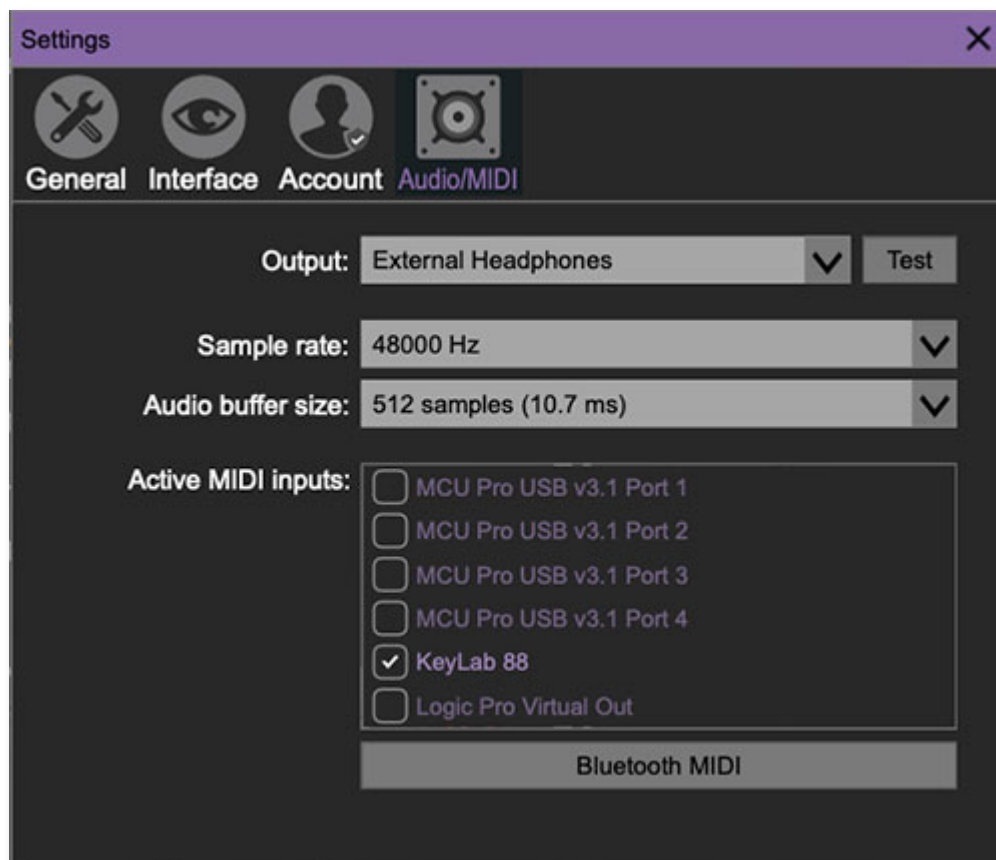
become available.

We'll never make changes that can potentially "break" existing patches but we recommend enabling *Ask Before Installing Updates* if you're using CR-78 for live performances or other "mission critical" situations.

- **Never Install Updates**- Updates are never automatically installed.
- **Show Updates On Toolbar**- Checking this will display an icon in the toolbar next to the logo letting you know there's an update available.

Show Notifications From Cherry Audio- We occasionally will fire off in-app advertisements; disabling this checkbox will hide them. We hate repetitive, annoying ads as much as you, so we don't use this feature too often.

Audio/MIDI



Not to be confused with the now-defunct audiomidi.com where I used to work, these are settings for audio and MIDI hardware input and output.

This tab is only visible in the standalone version of CR-78.

- **Output-** Use this drop-down menu to choose a physical audio output source. This defaults to *Built-In Line Output*, i.e. your computer's onboard system audio, but you'll get better fidelity with an external professional audio interface. The biggest audible difference is usually reduced background noise or hum, but external audio hardware also offers greater flexibility in terms of number of inputs and outputs and built-in mic or low-level instruments pres (i.e. electric guitars). The *Test* button will produce a sine wave when clicked; this will help with troubleshooting, aka, "WHY THE HECK ISN'T THIS MAKING ANY NOISE?!?"
- **Sample Rate-** This sets the global sample rate. Lower sample rates offer better performance, but if you have a fast computer, high sample rates may offer slightly improved fidelity (at the very least, they'll give you something to bicker about on gearspace.com).
- **Audio Buffer Size-** As with any digital audio app, this defines performance vs. note latency, and will largely depend upon computer CPU speed. A professional external audio interface will almost always exhibit better performance than "built-in" system audio. Lower settings will result in less latency (in the form of faster response to notes played), but will increase the chances of audio gapping or crackling noise.
- **Active MIDI Inputs-** Enable MIDI input sources, i.e. MIDI/USB keyboards, pad controls, MIDI knob/fader control surfaces, etc. Check boxes to enable one or more devices. **If a MIDI/USB controller isn't working in standalone mode, make sure the appropriate box is checked here.** (We put this this piece of info *way* at the back of the manual, to make it extra challenging to figure out why things aren't working.)