# PEDAL FADE ◉⧉ & BUTTON FADE ◉⧉ Series ▪ Utility Racks for Cantabile 3 Performer
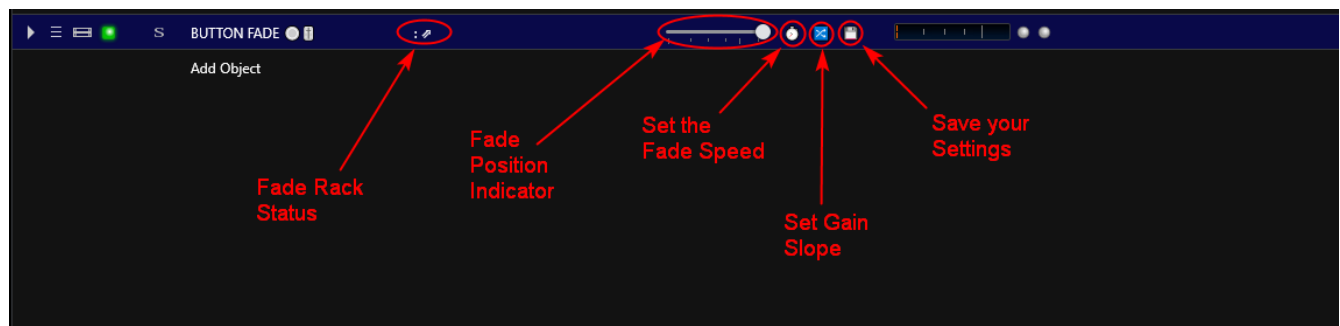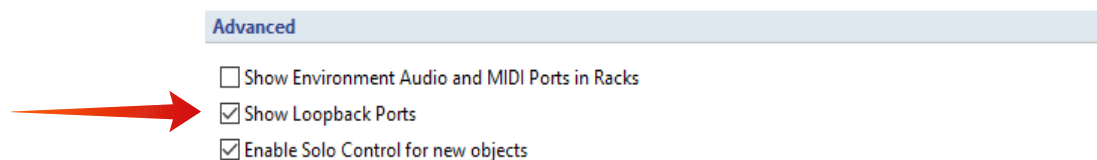
Hi All,

For the purpose of abbreviating the words "Cantabile 3 Performer" I will use "C♪3" to refer to the Cantabile host throughout this instruction set.

 I have been working on another new approach to the Fader racks I've been making. Primarily I wanted to get away from using a media player and MIDI file to produce a means of controlling the speed of incremental events used when scrolling or sliding up or down a Gain control. I came up with this new method that does not require the MIDI files or Media Player anymore. You use a choice of CC64 message types to the MIDI input on the rack to start and pause the fade and a CC2 momentary switch to reset the fade to the beginning of it's cycle and reset the increment stepper if you wish to use it in that way. So, in use you drop in the song, calculate the song length, enter the delay value, save your settings and check with your CC 64 switch input to make sure it times right for you. It also auto reverses and fades back down.

The easiest way to start off on the right foot is to unzip the contents of the .zip file to the C♪3 Racks folder location you use and it's ready to go. It's contents include a PDF manual as shown here.

Name	Extension	Size
BUTTON FADE ◉⧉.cantabileRack	cantabileRack	199,556
BUTTON FADE ◉⧉ Series for C♪3 Performer	pdf	238,484

In the Tools>Options>Miscellaneous>Advanced area make sure 'Show Loopback Ports' are checked!

Advanced

☐ Show Environment Audio and MIDI Ports in Racks
☑ Show Loopback Ports
☑ Enable Solo Control for new objects

In the picture above you see a description of the rack buttons on all the fade racks in the series that help make it easier to use.

- the rack states hamburger menu acts as the status indicator for the Fade event
- the racks' gain slider acts as a position indicator for the Fade Slider Position
- the first custom rack button is used to set the fade event speed
- the second custom rack button is used for setting the Gain slope and values for the fade event
- the third custom button is used for saving your setting to the Song file

 Un-check all the boxes in the state behaviors at Song level for all of these racks described here.

The hamburger menu shows the status of the button press. The "↗" state indicates the button is not pressed or in the case of the SAFE type fade racks that the fade is stopped or paused and the "↘" state indicates that the button is pressed and held and the fade is happening or in the case of SAFE type fade racks it shows the fade has been triggered and is happening.
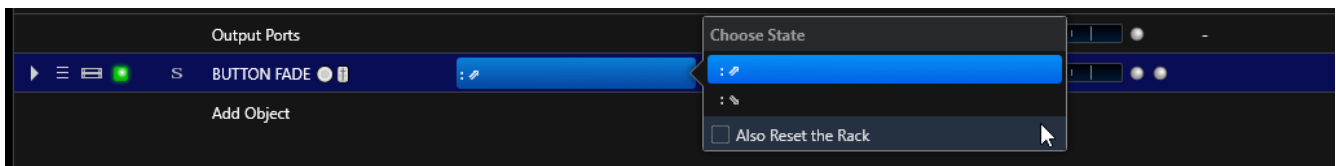

 The 1ˢᵗ custom rack button opens the dialog box for setting the speed value for the fade.
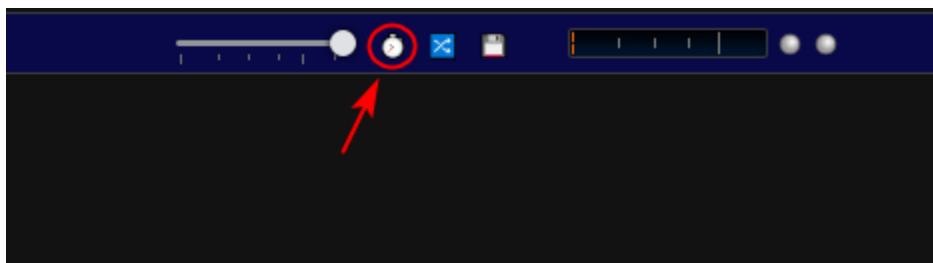

Once opened you enter the delay value in the top box only leaving the bottom box set to 0 milliseconds. To figure out what value to enter into the value box for the delay (which is entered in ms) you use different formulas depending on the mode.

- BUTTON FADE Delays value ▪ 1 ms in the Delays value box = .128 seconds full fade time

- BUTTON FADE SAFE Delays value ▪ 1 ms in the Delays value box = .128 seconds full fade time

- BUTTON FADE SAFE FINE Delays value ▪ 1 ms in the Delays value box = .674 seconds

So by entering 30 ms entered into the Delays value box you have 30 ms x .128 steps = 3.84 Secs and for the same 30 ms entry in the delays box with the Fine rack in use you get 30 x .674 steps = 20.22 Secs
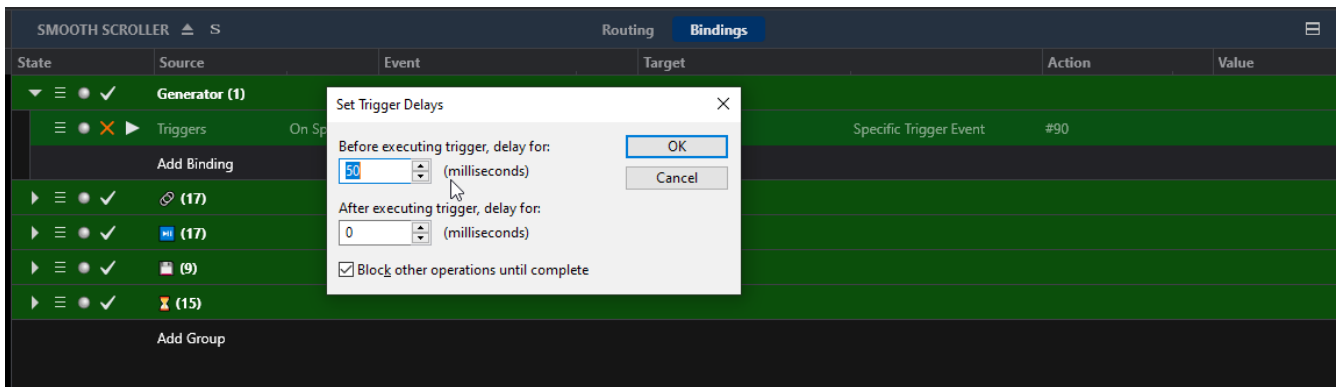
The 2nd custom rack button is for setting the gain slope of the fade event
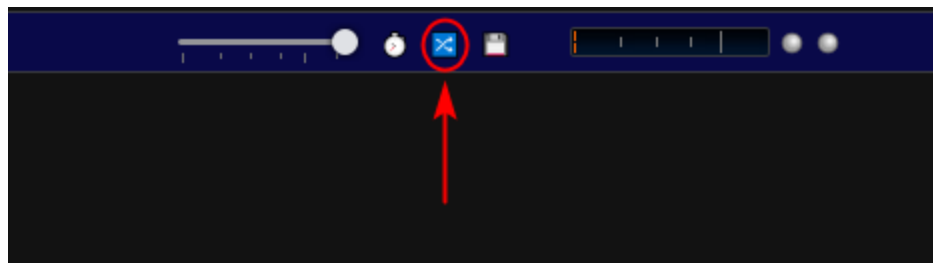

In the dialog box that comes up after pressing you fill in the 2 lower value fields with the db level you want the fade to start at and stop at.
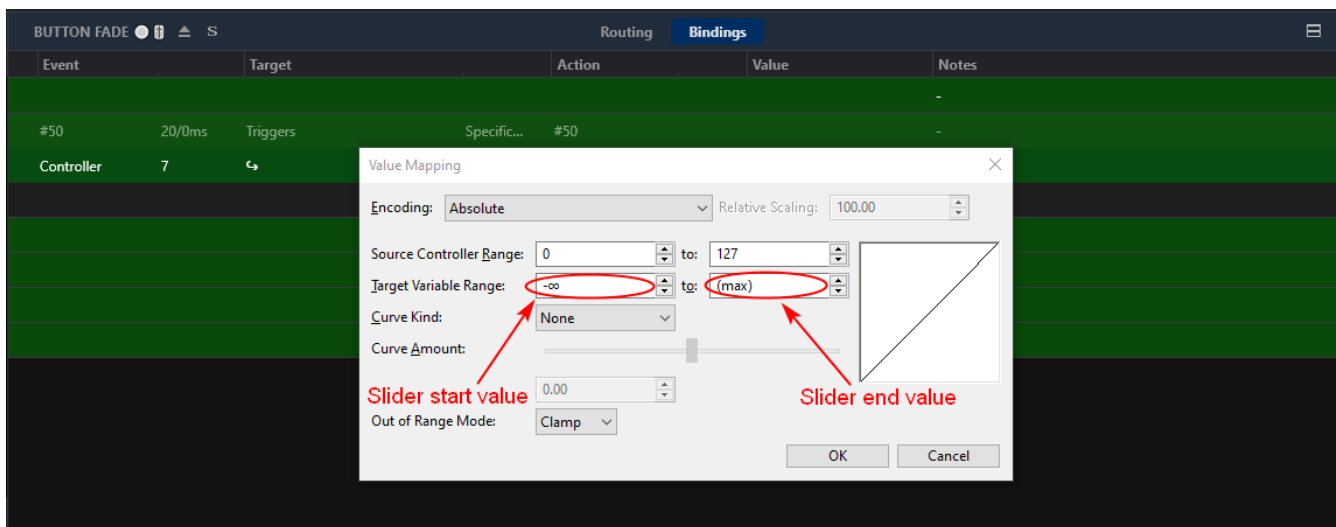
A feature of all the racks is that they reverse direction when the end of fade value is reached.

This behavior is different in the BUTTON FADE ◉▤ and the BUTTON FADE SAFE ◉▤ racks.

- The BUTTON FADE ◉▥ rack works by advancing the slider event when the button or pedal is held down and pauses the event when released. When you are pressing the button or pedal and the end value is reached it stops the event and upon release of the button or pedal automatically sets itself to reverse direction and fade the other way when pressed the next time. It is well suited to expression pedal replacement with a damper type pedal switch due to it's up / down tactility but it works well with buttons on any control surface. If you use an input binding to this rack it must have the source configured as "Controller" and the target configured as Controller (No Edge Button)

| ☰ ● ✓ ▶ Input Port - Main Keyboard | Omni | Controller | 64 | BUTTON FADE ●▯ - MIDI In | Ch: 1 | Controller (No Edge Button) | 64 |
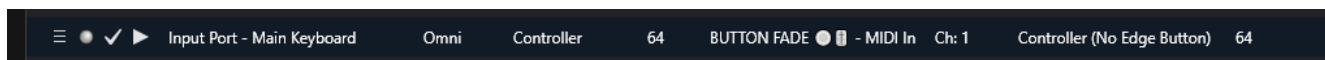
If you just use a simple route to it's input this is not a consideration

| ☰ | ✓ Main Keyboard | BUTTON FADE ●▯ - MIDI In | ▼. Omni |

- The BUTTON FADE SAFE ◉▥ racks work by triggering the event start and pause using a momentary press and release. The fade carries on until you press and release again to pause it or it reaches the end value. When it reaches the end value it automatically switches to the reverse direction ready to trigger on the next full key press. These racks are for triggered fades. If you want only one direction use you simply reset the rack with a CC#2 switch message when the first fade event ends instead of advancing it to the reverse direction with another CC#64 switch message. If you want a down fade you simply set the gain value to to those values and the down fade becomes the first event. A binding to the input would be configured with both the Source and the Target set to Controller(No Edge Button)

| ☰ ● ✓ ▶ Input Port - Main Keyboard | Omni | Controller (No Edge Button) | 64 | BUTTON FADE SAFE ●▯ -... | Ch: 1 | Controller (No Edge Button) | 64 |

A regular route to this rack is the same as for the BUTTON FADE ◉▥ rack.

The PEDAL FADE ◉▥ rack is similar to the BUTTON FADE ◉▥ rack but uses a facility that converts Expression Pedal CC#11 movements into momentary switch events. In use the momentary switch is set to slide so as soon as you press the pedal down and the value increases by +1 from it's current position to turn the fade cycle on. When you pull back on the pedal by an amount of -1 from its current position it pauses. Pushing down again resumes the fade until the top of the fade is reached the auto fade direction is automatically reversed and waits for an up or back pedal and then begins the down fade. The up or back Ex pedal actions work the opposite of the down pedal moves above. On Song Load the first state of the rack acts as a means of synchronizing the pedal to the rack auto faders so the direction is correct on first use. You simply pull the expression pedal all the way back to zero and the rack will change to the next rack state mode ready to use and set to fade on the next down pedal message. The rack also still responds as the BUTTON FADE ◉▥ rack when you send CC64 momentary switches to it's input so it can be used either way or in combination. You can see the rack states for the rack below and their descriptions.
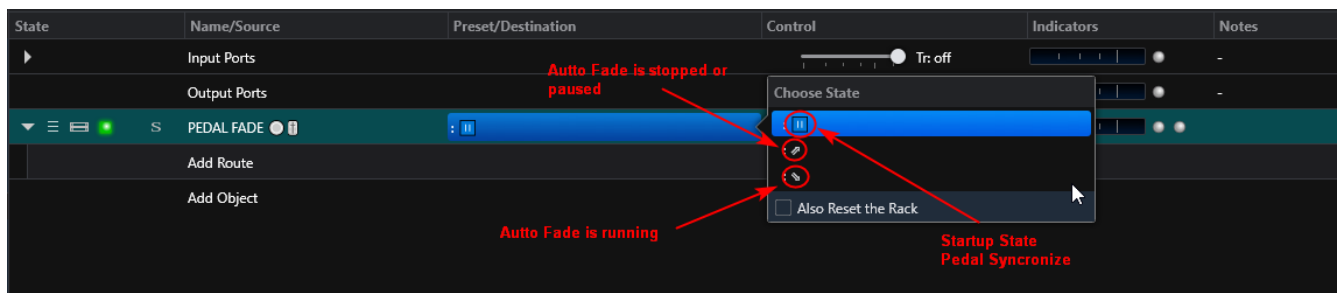
In the case of all the various racks described here you when you finish the setting of your gain values and/or speed settings that you have set you can close the rack editor using the escape button on the rack editor shown below and then
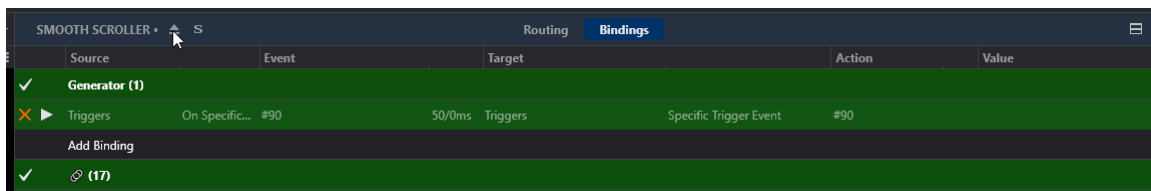
press the 3rd custom button on the rack to save the settings to the song file.
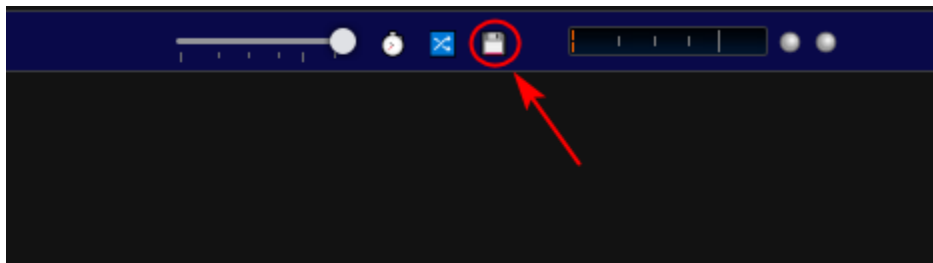
You can also use the Windows Function Key F9 from the inside of the rack after setting the delay value and/or gain values to save your settings and close the rack editor with one keystroke.

 When using the rack as a fader source there are some CC numbers to use for operating it remotely and for binding it to other objects.

- CC64 momentary switch messages at the MIDI In to start, pause and resume the fade on all racks

- CC11 Expression control messages at the input of the PEDAL FADE ◉ 🗐 rack only

- CC2 at the MIDI In used to reset all the embedded racks and set to the fade event starting point to do it again

- CC7 and CC7 (Fine) continuous controller messages at the rack MIDI out

Below are example bindings to and from the rack. Use Controller Fine bindings for the hi-res modes.

State	Source		Event		Target		Action		Value	Notes
▼ ≡ ● ✓	**OUT (3)**									-
≡ ● ✓ ▶	BUTTON FADE ● ▯ - MIDI Out	Omni	Controller	7	Media Player 1		Gain		0,127 → -∞,+7.3 dB	-
≡ ● ✓ ▶	BUTTON FADE ● ▯ - MIDI Out	Omni	Controller (Fine)	7	Media Player 1		Gain		0,16383 → -∞,+7.3 dB	-
≡ ● ✓ ▶	BUTTON FADE ● ▯ - MIDI Out	Omni	Controller	7	Output Port - External Synth	Ch: 1	Controller	7	0,127 → 0,127	-
	Add Binding									
▼ ≡ ● ✓	**IN (4)**									-
≡ ● ✓ ▶	Input Port - Main Keyboard	Omni	Controller (No Edge Button)	64	BUTTON FADE ● ▯ - MIDI In	Ch: 1	Controller (No Edge Button)	64		Sustain Pedal Trig
≡ ● ✓ ▶	Input Port - Nano Control	Omni	Controller (No Edge Button)	64	BUTTON FADE ● ▯ - MIDI In	Ch: 1	Controller (No Edge Button)	64		Control Surface Trig
≡ ● ✓ ▶	Transport	On Position	3 8.000		BUTTON FADE ● ▯ - MIDI In	Ch: 1	Controller (No Edge Button)	64		Song Marker Trig
≡ ● ✓ ▶	Input Port - Main Keyboard	Omni	Controller (No Edge Button)	2	BUTTON FADE ● ▯ - MIDI In	Ch: 1	Controller (No Edge Button)	2		RESET

🤓 ▪▪▪ Warning !! 🧪 Nerd Notes ☞

The experimental ideas in use in this rack involve the use of Cantabiles' column based GUI using batch navigation and UI commands triggered by the custom rack buttons and hotkeys. In addition there is the introduction of the free running clock generator that utilizes the C♪3 Triggers function and it controlled by rack states and use of stepping type bindings to create the up and down ramps used for auto fades.

In order to rid the design of the media player I needed a clocking source that would act independently. So I used a digital design called a free running clock. To do this in C♪3 I used the Triggers function. By triggering the same trigger in the same binding you in effect set up a feedback loop that executes at the speed it can determined by the Delays entry on the binding and any system latency added by the process of executing one cycle of the Trigger binding. I used the Delays on the bindings to allow control of the speed of any event I tied to it. I also set up a second binding in an embedded rack that was triggered by the same Trig number event and it's target value was of a sequence of numbers sequenced along by the constant clocking of the "feedback binding" (another new C♪3 term😁)

My previous auto fade rack versions had only 127 steps but I expanded one of the models released in this group that uses a high resolution scale of 674 steps using MIDI Fine bindings and the longer sequence of numbers in the value box of the stepper binding.

I created a custom button to open the setting box for the gain values of the start and stop of the fade event. I used another custom rack button to call up the delays value box in the rack binding that controls the delay time of the free running clock model I described earlier. I also made a way to save the value of this delay and the Gain value entries to the song file by escaping the rack editor and then using another special custom rack button or by pressing the F9 Windows function key while still inside the bindings which saves all the changes and exits to the song level ready to work.

🧪 End Nerd Notes ☞ ▪▪▪ 🤓

Special Thanks to Brad Robinson for creating and supporting Cantabile 3 Performer and all the good folk of the Cantabile User Community.

Thank You for Your Interest ▪ Dave Doré ▪ February 2021