

Behavior of HW Cued Combo stepper

I am creating a layout to implement the functionality of the Hauptwerk (HW) organ Combination Stepper with additional capability not available in HW. Below is the Mini Control Panel.



The HW Cued Combo Stepper has a range of 000 to 999. The 100's digit and 10's digit are entered by tapping the 100s Down and Up buttons to select a value from 0 to 9. Likewise the 10's Down and Up are used to select the 10s digit from 0 to 9. The 1s (xxn) digit is individually selected with one of 10 buttons. The 000 button will reset the stepper to 000. The current value is displayed between the Stepper Down and Up buttons.

The display between the 10s Down and Up buttons will display any changes to the 100s digit and the 10s digit. While changing the 100s or 10s digits, the display will indicate the selected values, but they will not be activated until one of 1s buttons is selected. For example, say we want to go to 410 from 123. Tap the hundreds Up button 3 times and the 10s Down button one time. The display will read 41x but 123 is still the current setting as indicated in the stepper value display. When 410 is to be activated, the xx0 button is tapped. The current value will now indicate 410.

The layout in MidiDesigner Pro to achieve this operation is based on 3 groups of 9 buttons, one to select the 100s digit, one to select the 10s digit and one to select the ones digit. A filter is used using the Stream Byte (SB) plugin to filter out (block) any midi messages associated with the MDP function while the buttons are being selected. Any other midi msgs are allowed to pass through. When the user has selected a three digit number, he activates it with a button to Initiate the setting in the organ. The midi outputs are as follows:

1. A SysEx message (58 01) initiates SB Processing to pass any further msgs for SB processing (currently using CC Chan 7).
2. A midi msg to activate the organ 000 reset (currently CC 7 10 127). This means the layout does not need to remember the current setting.
3. Three messages indicating the 3 digits selected are passed to SB for processing. The 100s digit is on Chan 7 CC 16 and the Midi Value represents the selected 100s digit from 1 to 9 (i.e., 7 16 *digit100*). Similarly the 10's digit is 7 17 *digit10* and the units digit is 7 18 *digit1*. The zero digit is represented by 127 for 100s and 10s since the 000 message already set them to 0.
For example, 123 will output: 7 16 1, 7 17 2, and 7 18 3.
200 will output; 7 16 2, 7 17 127, and 7 18 0.
4. The last msg is another SysEx (58 05) which will terminate the SB processing.

Desired timing is that the 58 01 message occurs before the any of the 3 digit msgs. The reset will pass through to the organ even if it comes before the 58 01 msg.

HOWEVER, it is important that the 100s and 10 digits are output to the organ before the 1s digit, since this activates the setting in the organ. So far in my limited layout, the msgs are always in the proper order 7 10, 7 16, 7 17, and 7 18. But I don't know if this will be true when I expand my layout to 10 buttons per digit or under other circumstances.

I use MidiMonitor on my Mac Book Pro to detect the messages. Currently I am not using Stream Byter since I cannot get the delay to work. SB will output the required number of Up commands to the organ for the 100s and 10s, and send a command to activate the specific 1s organ button (xxn).