

Midibox CV to extend "DOUTs"

Anyone who considers 2 or 8 gates too few, or wants to trigger vintage drum synths/modules (Roland x0x style), may find the existing hardware of the Midibox CV insufficient. The solution is simple.

Hardware

A dout module is needed, which will be connected to J8 of the coremodule. A doutx4 provides 32 gates/triggers. Some advice at this point: because it will be built without any optocouplers or transistors to protect the DOUT, it is essential not to apply any external voltage to the Gates/Triggers, and also to prevent short circuit.

Software

A few changes have to be made to the sourcecode. On the one hand, the dout has to activate the gate/trigger on receiving the appropriate NoteOn: on the other hand you may want to reduce the duration of an impulse to 1ms independent of the Note duration.

Here as background is the trigger characteristic of some drum machines. The x0x-boxes (606,808,909...) trigger the sound at decrease of voltage at the gate instead of increase. (IE at the trailing edge of the +ve pulse rather than the leading edge - is that correct? this is known as S-Trig? - Bunsen)

Activate dout:

Download the source of Midibox CV at http://www.ucapps.de/mios_download.html and search for the following in "main.asm":

```
USER_MPROC_NotifyReceivedEvent
;; process MIDI event
call    CV_MIDI_NotifyReceivedEvent

;; for best latency: branch to USER_Tick so that the new CV values
;; will be mapped immediately
rgoto   USER_Tick
```

Replace it with:

```
USER_MPROC_NotifyReceivedEvent

;; BEGIN --- control DOUT pins via Note events at channel #1
movf    MIOS_PARAMETER1, W          ; Note Off -> Note On with velocity 0
andlw   0xf0
xorlw   0x80
bnz     USER_MPROC_NRE_NoNoteOff
USER_MPROC_NRE_NoNoteOff
bsf     MIOS_PARAMETER1, 4
clrf    MIOS_PARAMETER3
USER_MPROC_NRE_NoNoteOff

movlw   0x90                        ; check for Note On at channel #1
IFNEQ   MIOS_PARAMETER1, ACCESS, rgoto USER_MPROC_NRE_NoNoteChn1
```

```
USER_MPROC_NRE_NoteChn1
;; MIOS_DOUT_PinSet expects pin number in WREG, value in MIOS_PARAMETER1
movf    MIOS_PARAMETER3, W        ; velocity == 0: off, velocity != 0:
on
    skpz
    movlw    0x01
    movwf    MIOS_PARAMETER1

    movf    MIOS_PARAMETER2, W        ; pin number: note number - 0x24, we
start with C-2
    addlw    -0x24
    andlw    0x7f
    call     MIOS_DOUT_PinSet
USER_MPROC_NRE_NoNoteChn1
;; END --- control DOUT pins via Note events at channel #1

;; process MIDI event
call     CV_MIDI_NotifyReceivedEvent

;; for best latency: branch to USER_Tick so that the new CV values
;; will be mapped immediately
rgoto    USER_Tick
```

What happens here? Midibox CV is listening to the first channel (beginning from tune C-2) for a NoteOn and activates the corresponding dout. A NoteOff deactivates the dout.

1ms extension for Vintage Drummer:

Those who want to trigger Vintage Drummer have to modify the sourcecode as follows: Search for the following:

```
USER_SR_Service_Finish
;; ---[ handle with control surface variables (flashing cursor, etc) ]--
-
    goto     CS_MENU_TIMER
```

Replace it with:

```
USER_SR_Service_Finish
    clrf     MIOS_PARAMETER1
    movlw    0x00
    call     MIOS_DOUT_SRSet
    movlw    0x01
    call     MIOS_DOUT_SRSet
    movlw    0x02
    call     MIOS_DOUT_SRSet
    movlw    0x03
    call     MIOS_DOUT_SRSet
```

```
;; ---[ handle with control surface variables (flashing cursor, etc) ]--  
-  
goto CS_MENU_TIMER
```

This leads to a reset of all DOUTs once per cycle - this lasts 1ms. So the drum modules can be triggered with a 1ms latency.

(Would it be possible to instead have the DOUT pins held normally high, and drop to 0v on NoteOn? That way there should be no latency. - Bunsen)

Forum articles:

<http://www.midibox.org/forum/index.php?topic=2701.0>

<http://www.midibox.org/forum/index.php?topic=6333.0>

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Last update: **2006/10/15 10:35**