

Multi-Channel MIDI Configuration

To control individual pedals from the same MIDI controller, each receiving device needs to be assigned a unique channel number. For example:

MIDI Controller
e.g. Boss ES-8

MIDI Splitter
e.g. Kenton Thru-5

MIDI Devices
e.g. Tremotron + Syncopy



Setting Stone Deaf Pedal MIDI Channel:

To enter MIDI setting mode on a Stone Deaf FX pedal, press and hold the bypass footswitch for 5 seconds WHILE the pedal is bypassed (FX OFF). MIDI Setting mode allows you to change the MIDI channel between 1 and 16 using the Depth control. It also allows you to enable/disable MIDI Beat Clock by pressing the shape control (more on MIDI beat clock later!!!):

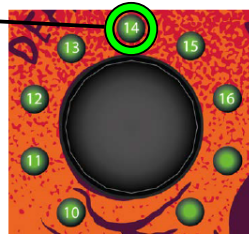
Example Settings:

Turn Depth encoder until Second LED = RED...
MIDI Channel = 2

Turn Depth encoder until Fifth LED = GREEN...
MIDI Channel = 14



When in MIDI setting mode, turn the depth knob to set MIDI channel.



When in MIDI SETTING MODE, Press 'Shape' to turn MIDI Beat Clock ON/OFF GREEN/RED

Changing Presets with MIDI

Stone Deaf Products use MIDI Program Change messages to select device Presets. Depending on your MIDI controller, there will be a few different ways that this can be configured. Typically, the MIDI controller's default behaviour is to transmit MIDI program changes when a bank or patch change footswitch is pressed.

Program Change Message Structure:

MIDI messages are made up of a sequence of bytes (8-bit words). Every valid MIDI message should start with a STATUS BYTE. The status byte sets the **MIDI Channel** and the message type, so that the receiving device knows how to handle subsequent control bytes. A program change message is made up of just 2 Bytes. The **Program Change** Status Byte and the Program Number Byte. The binary representations of these bytes are detailed below:

Status Byte	Data Byte 1 - Program Number
1100 nnnn	0ppp pppp

1100 = 12 = Program Change. i.e. "This is a Program Change Message on Channel **nnnn**"

nnnn = 4-bit Channel Number between 0 and 15.*

ppppppp = 7-bit Program Change Number between 0 and 127.

* NOTE: Most MIDI controllers will send a value of 0 to select MIDI channel 1 and 15 to select MIDI channel 16. (Chan = **n** + 1) Check the MIDI controllers User Manual for confirmation.

Examples:

Using the message structure defined above, here are some examples of how to change Preset numbers on a Stone Deaf Device:

Status Byte	Program Number	Result
1100 0000	0000 0000	Set Device(s) on Channel 1 to Preset 1
1100 0001	0000 0100	Set Device(s) on Channel 2 to Preset 5
1100 1111	0111 1111	Set Device(s) on Channel 16 to Preset 128

On Stone Deaf Pedals, Preset Numbers start at 1, which is selected by sending a program change value of 0. There are 4 LEDs for Preset Indication. These will update to show which preset has been selected in a bank of four. E.g:

Program Num = 0
Preset = 1
Bank = 1
LED = 1

Program Num = 1
Preset = 2
Bank = 1
LED = 2

Program Num = 4
Preset = 5
Bank = 2
LED = 1

Program Num = 127
Preset = 128
Bank = 32
LED = 4



General Term:

$$\text{Preset} = \text{Program Num} + 1$$

$$\text{Bank} = (\text{Program Num} / 4) + 1$$

$$\text{LED} = (\text{Program Num} \% 4) + 1$$

Changing Presets with MIDI - Controller Examples

The previous page described MIDI Program change messages at a bit/byte level. In Most cases, you will not need to know this level of detail. MIDI controller solutions aim to simplify MIDI control messaging and handle all of the byte-level message construction for you.

It would be impossible to provide an exhaustive list of various MIDI controller idiosyncracies. With MIDI being such a flexible protocol, it allows Manufacturers (and Users!) to define their own way of implementing controls. Valiantly, the examples below aim to demonstrate how some of the most popular controllers on the market operate:

Boss ES5/8:

Instructional Video from Boss: <https://www.youtube.com/watch?v=BIImzAFgiHOc>

- 1) Press EDIT, scroll to the patch menu and press ENTER.
- 2) Scroll to Patch MIDI 1 and Press enter. You'll then see this screen:

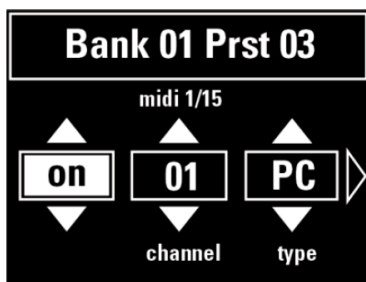


Ch = MIDI Channel, PC = Program Change Number

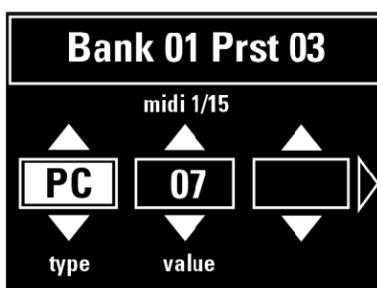
- 3) Set MIDI Channel to the same number as your Stone Deaf Pedal (or other target device).
- 4) Set the Program Change Value to the corresponding Stone Deaf Preset.
- 5) WRITE the changes to the BOSS patch.

GigRig G3:

- 1) While in Preset EDIT mode, scroll down to "midi out"
- 2) You can trigger up to 15 MIDI messages on each preset change. Scroll Right to edit one of the available MIDI out messages:



- 3) Set the Channel to the same number as your Stone Deaf Pedal. Select "PC" for MIDI Program change on the specified channel. Scroll right to choose Program Num:

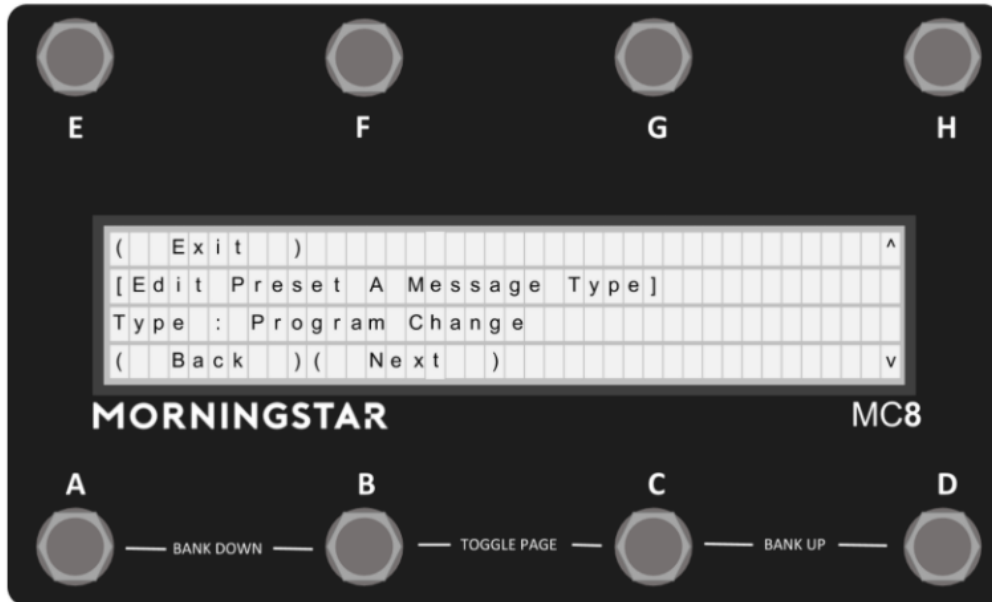


- 4) Press the "DEEP EDIT" button and the preset number to store and exit.

Changing Presets with MIDI - Controller Examples 2

MorningStar MC8:

- 1) Press Edit Menu, and select one of the 16 available MIDI messages on the current preset.
- 2) Press NEXT to edit the selected message.
- 3) Select the preset switch action (usually this will be Toggle Position 1 for a button press)
- 4) Press NEXT until [Edit Preset (A-H) Message Type] is displayed.
- 5) Here you select "Program Change" as a message type.
- 6) Press NEXT again to set the program change number:



MIDI Control Changes (CC)

Stone Deaf Products use MIDI Control Change Messages (sometimes referred to as Continuous Controllers) to offer automation of parameters. For example, the RATE control of a Tremotron can be controlled via MIDI CC number 20.

Control Change Message Structure:

As with Program Change Messages, Control Change Messages are identified by a Status Byte, which also sets the MIDI **channel**.

The Control change **status byte** is then followed by a **CC Number** and a **CC Val**. i.e. "This is a Control Change Message for CC number 20 (Rate), with a value of 64"

Status Byte	Data Byte 1 - CC Number	Data Byte 2 - CC Val
1011 nnnn	0ccc cccc	0vvv vvvv

1011 = **11** = **Control Change**. i.e. "This is a Control Change Message on Channel **nnnn**"

nnnn = 4-bit Channel Number between 0 and 15. (sets range Chan 1 to Chan 16)

ccc cccc = 7-bit Control Change Number between 0 and 127.

vvv vvvv = 7-bit Control Change Value between 0 and 127.

Examples:

Using the message structure defined above, here are some examples of how to adjust Control Changes on the Stone Deaf Tremotron (For a list of all CC numbers, see your Pedal's Manual)

Status Byte	CC Number	CC Value
10110000	0001 0100 = 20 = RATE	0111 1111 = 127 = Set MAX Rate
10110000	0001 0101 = 21 = DEPTH	0100 0000 = 64 = Set Depth to ~50%
10110000	0001 0110 = 22 = SHAPE	0000 0000 = 0 = Shape to 0 (Sine)

Control Changes can also be used as state switches. There are two common ways of implementing control switches. Some manufacturers specify that a CC value of Zero sets the switch OFF, where any non-zero value sets the switch ON. Stone Deaf define OFF as any CC value less than 64. Any value of 64 or greater will turn the switch ON. FX Activation Switching is good example of this control mechanism:

Status Byte	CC Number	CC Value
10110000	0001 1101 = 29 = FX Active	0111 1111 = 127 = FX ON
10110000	0001 1101 = 29 = FX Active	0100 0000 = 63 = FX OFF (bypass)
10110000	0001 1101 = 29 = FX Active	0000 0000 = 0 = FX OFF (bypass)

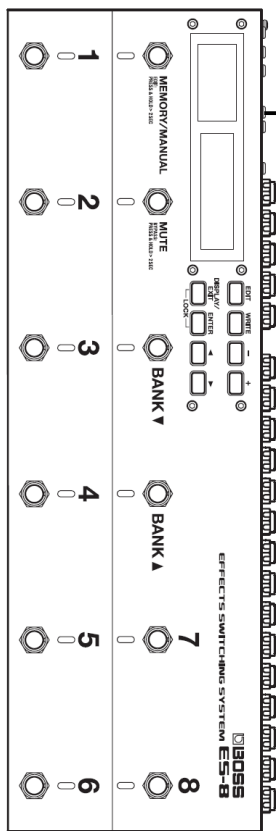
MIDI Beat Clock (AKA Timing Clock)

Stone Deaf Products can be synchronized to a common MIDI clock. This feature can be used to make sure all your effects are set to the same tempo. The MIDI protocol specifies a number of **System Real-Time** messages that provide timing information to MIDI devices. They DO NOT specify a channel number (They are a single Byte, no data byte follows the status Byte). Therefore, any real-time messages sent on a daisy-chained MIDI cable will be received by all pedals in the chain. For this reason, most pedals will allow you to disable MIDI beat clock. This is important if you want any effects to ignore the timing clock. For Example, the following configuration would allow you to have a slow out-of-sync tremolo swell after a fast-paced crotchet-beat delay:

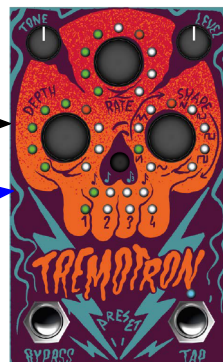
MIDI Controller
Set to Output MIDI Clock

MIDI Splitter

MIDI Devices



MIDI Channel = 1
Beat Clock = ON



MIDI Channel = 2
Beat Clock = OFF



**Note that you can turn MIDI Beat-Clock on and off using MIDI CC message 30. This allows you to turn sync OFF for some presets and ON to bring all of your effects back into lock. Stone Deaf Pedals support these System Real-Time messages:

Status Byte	Name	Description
11111000	Timing (Beat) Clock	Sent 24 times per crotchett (1/4 note) to provide Sync to all beat-clock enabled devices.
11111010	Start	Resets to start of the "bar". For eample, tremolo will return waveform to start of the wave.
11111011	Continue	Same implementation as the "start" message
11111100	Stop	Stop tracking timing clock until a Start message Is received.