Shakmat
Bard Quartet Expand
MIDI Implementation

Introduction

Three MIDI modes can be assigned independently to any of the Bard Quartet's 4 channels:

01. MIDI Quantization Control
Press MIDI button (the MIDI Button LED is on).

02. MIDI-to-CV/Gate Conversion
Hold MIDI button for 2 sec.
(the MIDI Button LED blinks slowly).

03. MIDI-to-CV/Gate Conversion with Quantization
Hold MIDI button for 2 sec. then press again
(the MIDI Button LED blinks fast).

MIDI modes operate on a channel-level, which means that they apply to all the harmonies of a certain channel for a given memory slot.

MODE 01.
MIDI Quantization Control

MIDI Channels 1 to 4 can control the scales of the Bard Quartet's channels 1 to 4, respectively, for the current harmony. This allows for:

- **Real-time control of a quantizer scale using an external keyboard:** if you keep the harmony constant, you can play the external keyboard in real-time to control a quantizer channel.
- **Simultaneous programming of all channels:** since MIDI channels can run simultaneously.
- **Fast programming of scale-progressions:** play your chord progression on an external MIDI keyboard while scanning the harmonies.

MIDI only affects Scale Edition, all other features of the Bard Quartet are controlled by the module's interface.

MODE 02.
MIDI to CV/Gate conversion

The Bard Quartet's channel bypasses the quantizer and becomes a true MIDI-to-CV/Gate device. Scale edition is therefore no longer possible. However, Edit functions such as Octave, Gate-In, Trig-Out and Transpose are still available. MIDI channels 1 to 4 can control Bard's channels 1 to 4, respectively.

- **Trigger Outputs:**
  Trigger Outputs become Gate Outputs, according to incoming MIDI messages.
- **Gate Inputs:**
  If Track & Hold is active: same as with the quantizer, Note-On messages are ignored then Gate-In is low. However, Note-Off messages are never ignored.

  If Sample & Hold is active: when a rising edge is received, the channel releases the last received MIDI note; if the note is different from the previous released note, a Trigger is sent to Trig-Out.
- **Normalisation:**
  MIDI notes are normalised to the next channel (1 ▸ 2 ▸ 3 ▸ 4).
- **Shift-Register:**
  The shift-register doesn't require a clock signal in the Gate Input 1 anymore. The shifting occurs whenever a MIDI Note-On is received. This allows for a very useful polyphonic application: playing a four note chord on MIDI channel 1 and having all notes parsed on the 4 channels of the Bard Quartet.

  For Track & Hold (Sample & Hold), since the Shift Register no longer requires Clock In signals, Gate Inputs become Track & Hold (Sample & Hold) for each individual channel.

MODE 03.
MIDI to CV/Gate conversion with quantization

This MIDI mode allows MIDI channels 1 to 4 to control the Inputs of the quantizers on Bard's channels 1 to 4, respectively.
For such a channel, the CV input is disabled and the quantizer (arpeggiator) takes as input MIDI notes (MIDI note changes) to perform its duty.

- **Trigger Outputs:**
  Trigger Outputs follow the original Bard Quartet behavior. Even if the incoming MIDI note is different from the previous one, if both yield the same output voltage (according to the quantizer), no Trigger Out signal is sent.
- **Gate Inputs:**
  If Track & Hold is active: if the Gate Input becomes high when a MIDI Note was active (Note-On message sent without a Note Off message), the quantizer tracks that note and all following MIDI Note ON messages.

  If Sample & Hold is active: when the Gate Input becomes high, the quantizer tracks the last received MIDI Note.
- **Arpeggiators:**
  Each Received MIDI note acts as an arpeggiator Clock In signal. This also works with Channel Normalization and Shift Register. The analogue Clock In (CV in) is still active: clock signals from MIDI notes and CV In can therefore be combined.
- **Normalisation:**
  Quantizer channels react to the OR combination of the MIDI note messages received on the previous and own MIDI channels.

- **Shift Register:**
  Whenever a new MIDI note is received at a channel, its previous note is transmitted to the next channel. If the next channel also receives MIDI notes it takes the combination of the two (with priority to its own MIDI Channel). If multiple MIDI channels are sending notes, the Bard Quartet channels that come after the channels receiving MIDI Notes, get combinations of received MIDI Channels, with priority to the highest MIDI channel sending notes.

  For Track & Hold (Sample & Hold), since the Shift Register no longer requires Clock In signals, Gate Inputs become Track & Hold (Sample & Hold) for each individual channel.

Channel interaction with MIDI

Although all channels can be independently set to different MIDI modes in independent operation, Channel Interactions (Normalisation/Shift Register) require all channels to be set to the same MIDI mode. Enabling Channel Interactions will therefore automatically set all channels to the same MIDI mode and the same Channel Interaction. Likewise, changing a MIDI mode while having Channel Interactions enabled, will disable all Channel Interactions.

Disable your MIDI CC

The Bard Quartet is designed to track MIDI note messages accurately over all MIDI channels involved, regardless of MIDI transport messages. However, sending way too many unneeded MIDI messages (like continuously evolving MIDI CC) can disturb the MIDI functions of the Bard Quartet. It is therefore advised to disable MIDI CC messages on your MIDI device.