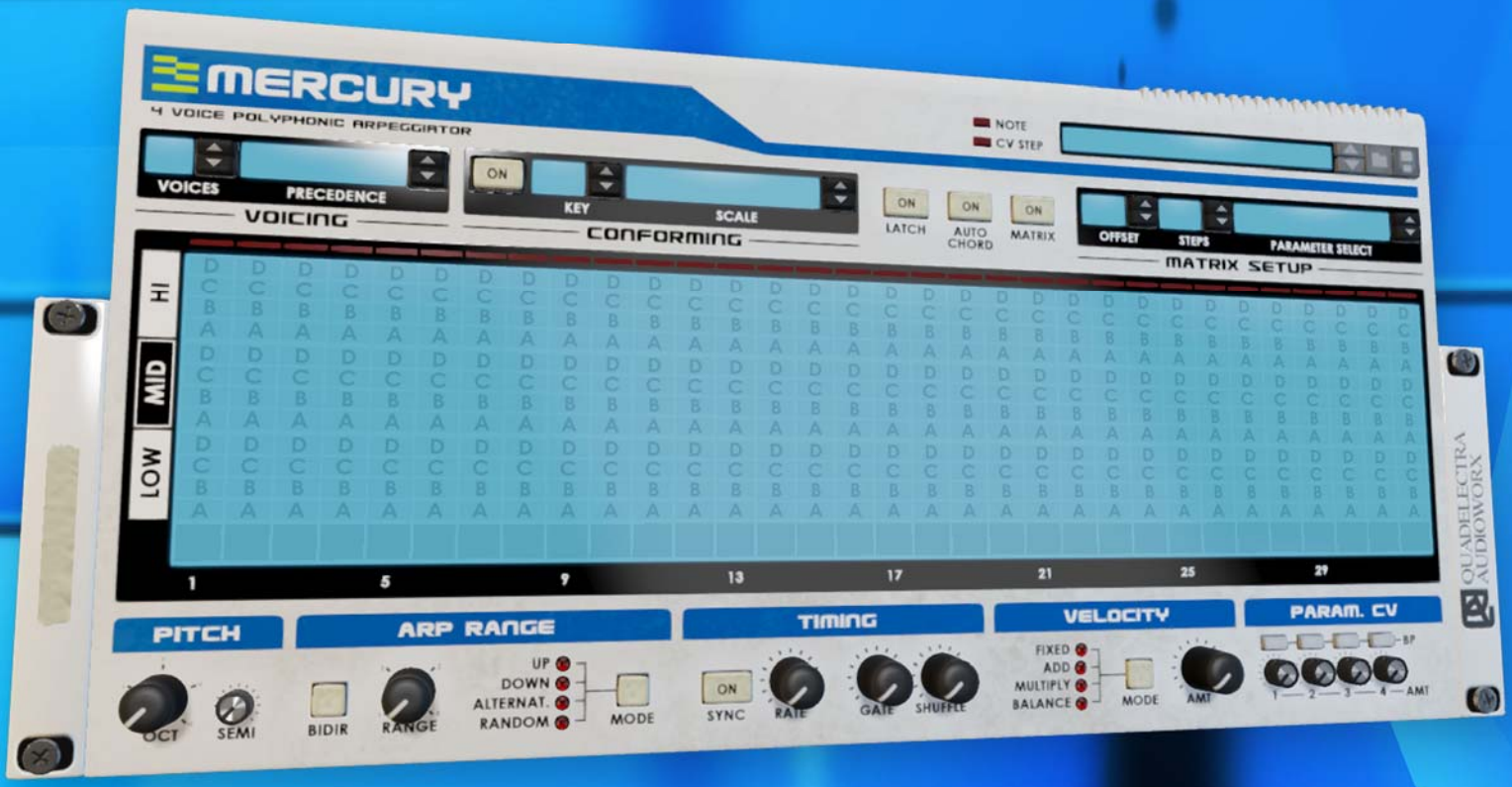
MERCURY

4 VOICE POLYPHONIC ARPEGGIATOR



Operation Manual

QUADELECTRA AUDIOWORX

Re Rack Extension

(Page intentionally left blank)

1. Introduction

1.1. Welcome To Mercury!

Congratulations and thank you for trying / purchasing Mercury 4 Voice Polyphonic Arpeggiator by Quadelectra! As always, we've worked hard, but we couldn't be more excited doing so, as we wanted to deliver an inspirational device. One that will assist you in your musical quests, enhance your creativity, productivity, and finally gain a respectful position in your Reason Rack Extension arsenal.

We hope you enjoy and love using Mercury in your music!

1.2. Mercury! A Polyphonic Arpeggiator For Reason.

Mercury is the first true polyphonic arpeggiator Rack Extension for Reason, incorporating many innovative features, some known and some new, never being met before in similar devices.

But before diving into any other details let's see how Mercury interoperates with the rest of your Reason Rack:

First of all Mercury is not an instrument by itself. Mercury is an arpeggiator i.e. a device that coordinates –or better yet, sequences- other instruments to playback their tones. Mercury accepts notes either from Reason arrangement or your MIDI keyboard, applies a series of transformations to these notes and sends the output as a set of CV signals. To put it in a much simpler way Mercury works in the sense of Reason's own RPG-8 Arpeggiator.

CV signals are streams of electric current (or in Reason's virtual studio floating point number data) carrying information about the tone and the velocity of a single note! Since most probably you already have worked with devices such as the Matrix or RPG-8, you might have realized the limitations of Note / Gate CV signal pairs, when it comes to the issue of polyphony.

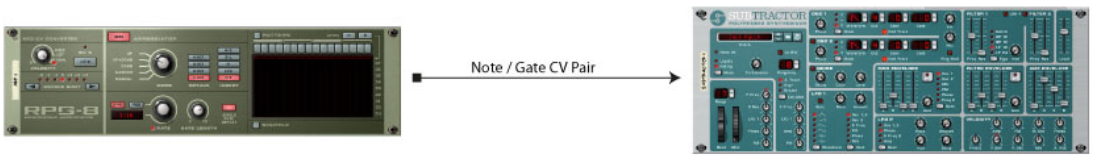


Fig.1-2a: A typical Note / Gate (or CV / Gate) connection between a sequencer and an instrument

Mercury copes with that limitation by exporting a set of four different groups of CV signals, each of which can be sent to different instrument. By sequencing single notes to each of the four Note / Gate pairs, Mercury spreads its processing results to all the connected instruments simultaneously, thus achieving a polyphonic result! The instruments connected to Mercury for sequencing are called "Voices" and each voice has a number from 1 to 4.

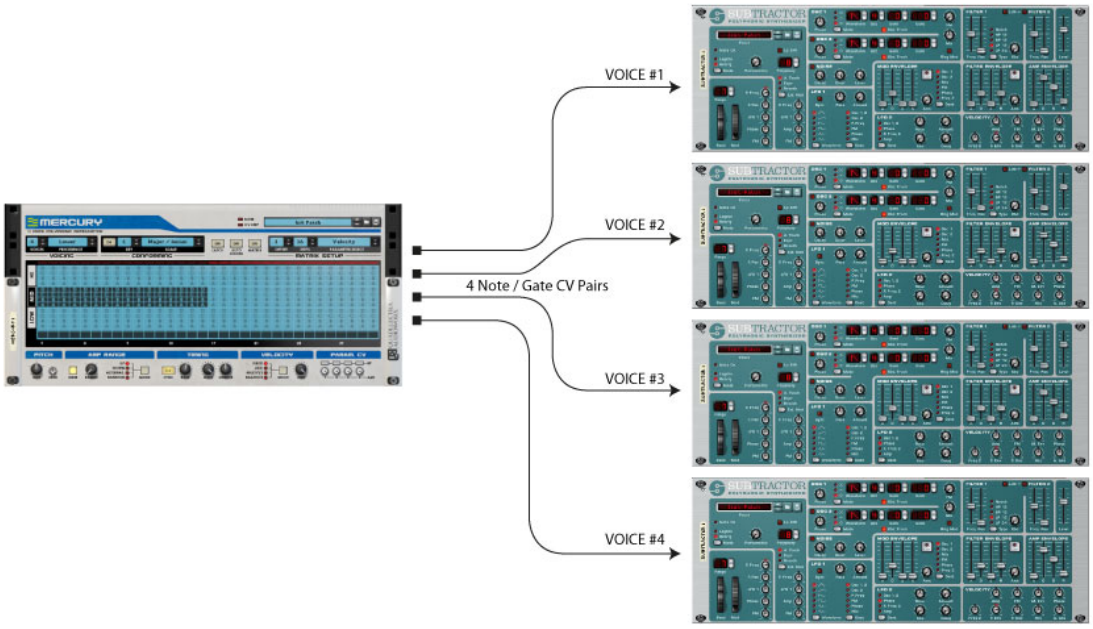


Fig.1-2b: Mercury polyphonic Note / Gate CV connection. The device can sequence up to 4 different instruments, called "Voices" and numbered from 1 to 4.

Mercury also exports Modulation Wheel and Pitch Bend information, but also four CV signals for any other Modulation targets you wish to handle alongside with the sequencing, for each voice.

Although you can add Mercury directly in your Reason Rack, we recommend using it inside Combinators. This will allow saving any CV / Audio connectivity inside a Combinator patch and the ability to load it for future use.

2. A Dive Into The Deep

So how does Mercury process your input and produces the final output? From the moment you press a single note or a chord, mercury starts processing the given notes, by applying a series of transformations, sequencing operations and finally arpeggiation.

These 3 distinctive sections reflect the 3 basic modules, shown in the figure 2-a bellow:

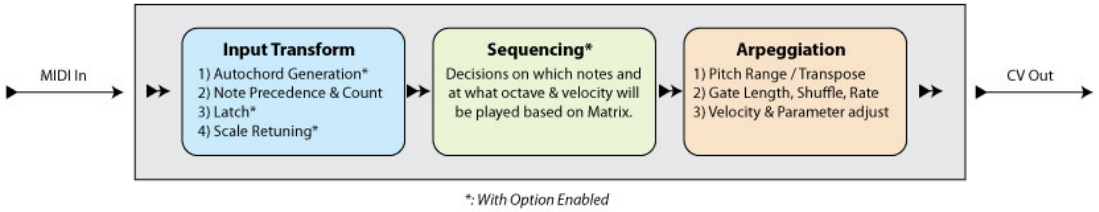


Fig.2-a: The series of processes taking place when you start playing a note or a chord in Mercury. Note that processes marked with an asterisk (*) are optional, and take place only when their dedicated switches are enabled.

2.1. The Input Transform Module

The Input Transform Module will start processing when you hit a key or a chord, on your keyboard or you draw some events inside a part.

These are the processes that the Input Transform Module applies to the input.

- First and foremost, if the Auto Chord function is enabled, Mercury will transform the MIDI / arrangement source notes in to a chord. Auto Chord, takes simple MIDI key presses and transforms them to chords. If Auto Chord is disabled, the notes that you've pressed will be forwarded as-is to the next task.

- Next is the voicing process. Mercury is sorting out which and how many notes does it have to take in account to transform. The settings you choose from the "Voicing" section can have a strong impact on the final result.

- "Latch" will "decide" if the pressed notes should stop being processed upon key release (when disabled), or being keept playing until the next key press or until the same set of notes is pressed again, in which case the device will release the chord and stop processing.

- The final task is called conforming. When enabled, the incoming notes will be "conformed" to a specified key and scale.

2.2. The Sequencing Module.

The Sequencing Module (or Chord Matrix) controls the sequencing data to be played, before the final processing by the arpeggiator. It consists of a 32 columns x 12 rows matrix, plus an extra parameter row.

As soon as the input information is processed by the Input Transform, Mercury will use the matrix to determine a series of things:

- Which chord notes are enabled -if any enabled- in the current sequencer step, and at what octave should be played, as described above.

- Tiling: Along with the chord note settings the chord matrix will take in account any tiling between steps, sustaining *only* the notes that remain unchanged between a tiled step and its successor.

- Chord Matrix will also take in account the Velocity from the parameter row, right under each step. This velocity setting will be calculated in the arpeggiator, along with the Velocity Amount, and the Velocity from the MIDI key of each note. We'll see how all these values are calculated, below.

- Finally the Chord Matrix will take in account any parameter values you draw in the parameter row. These parameters will be transformed according to the "Param CV" (Parameter CV) options you specify on the device, and forwarded to the CV outputs of each voice.

2.3. Arpeggiator

The Arpeggiator is the third and final processing stage! Its settings will apply to the transformation result from the chord matrix. The sections underneath at the bottom of the panel, reveal the processes that the Arpeggiator performs in this stage. These Are:

- Transposition: The notes can be transposed by +/-2 octaves and/or +/-11 semitones. Note that if you are using "Conforming" to constrain the input notes to a specific key/scale, these settings still apply and will be processed *before* transposing.

- While transposition sets a constant pitch change for all steps, next process will change the transposition of the each chord, per step basis. The section dedicated to that is the "Arpeggiator", and its similar to the Reason's own RPG-8 Arpeggiator.

- Timing will take care of things related to the arpeggiator's clock. Processes include step rate which you can adjust in time or tempo units, gate length and syncopation (shuffle).

- The next process will calculate all velocity values: From MIDI key, the Chord Matrix Velocity parameter row and Velocity Amount (found in the corresponding "Velocity" section) are calculated in order to form the final value to be passed to the Gate CVs of the voices. Mercury offers 4 different modes to treat the velocity values.

- Finally the last process, corresponds to the "Param CV" section, and its dedicated to the four custom Parameters you can control via the Chord Matrix parameter row.

3. The Front Panel

The Panel of Mercury is divided into 12 sections

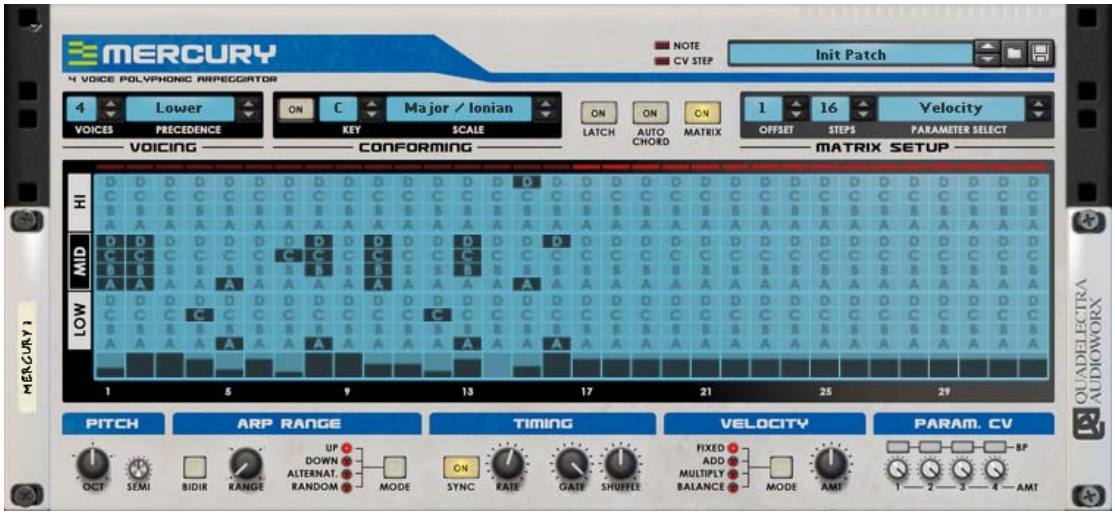


Figure 3a: The Mercury Front Panel

The first two regions at the top left of the device are well-known to all reason users. These are:

3.1. Note / CV Step Indication LEDs

The Note Indication LED flashes when a note is pressed or released from the arranger or the MIDI keyboard.

The CV Step LED is enabled when you connect a CV signal to control the sequencing step from the device's Matrix. More information about this feature is discussed at *Chapter 4.1 (The Matrix Step)*.

3.2. Patch Browser

This is the standard Patch Browser set of controls that allow you to browse for Mercury patches and save your own.

Right below we can see four sections that control some basic functions, the chord matrix and the note input transformation properties. These are:

3.3. Voicing

The voicing section controls the amount of concurrent voices that Mercury will handle, but also the precedence logic under which extra voices will be assigned. Two controls are exposed here:

1. **Voices:** The number of total voices that Mercury will handle, it can be from 1 to 4.

2. **Precedence:** This sets the logic under which chords with simultaneously pressed keys above the voice limit will be assigned. Precedence modes take in account either the pitch / note or the order in which the notes were pressed.

   Note that in all cases -even if you press all of the notes in a chord simultaneously- ordering in the pressing of these notes still applies, from lowest to the highest MIDI key.

   The four supported precedence modes are:

   a. **Lower:** The lowest keys are preserved. If you press five notes f.e. the lowest four will be processed. If after you press the chord, you hit a key below the highest processed voice, the key will take the place of that note.

   b. **Higher:** The higher keys are preserved. If you press five notes the four highest will be processed. If you press a key higher than the lowest processed note, the new key will take the place of that note.

   c. **Last:** Any extra note or a note pressed after the chord will replace the last processed note in the order the chord notes where pressed.

   d. **First:** Any extra note of the chord or a note pressed after will replace the first note and subsequently all the notes after that.

3.4. Conforming (Scale Conforming)

This section, allows you to set a key and a scale and constrain all input notes to the ones of that setting.

1. **On (Enable):** This switch enables or disables Scale Conforming.

2. **Key:** The scale key. Possible values are all notes within an octave (from A to G#).

3. **Scale:** Mercury has nine preprogrammed scales. For the time being, in version 1.0 you cannot create custom scales. These scales are:

   a. Major / Ionian
   b. Minor (Harmonic)
   c. Minor (Natural)
   d. Dorian
   e. Mixolydian
   f. Aeolian
   g. Blues 1
   h. Blues 2
   i. Pentatonic

3.5. Main Performance Switches

The title refers to the three main switches at the right of the "Conforming" section. These switches enable or disable fundamental processes of Mercury, and for that reason they have a distinct position in the front panel. The switches are:

1. **Latch Mode:** Enables or disables latching on chords. More information on how latching works can be found at chapter 5.2.

2. **Auto Chord:** Enables or disables the auto chord mode. You can find detailed information on Auto Chord function, and how it works, in chapter 5.1.

3. **Matrix:** Enables or disables the chord matrix. If you disable the chord matrix, the result of the input transform module is passed directly to the arpeggiator.

3.6. Matrix Setup

At the top-right of the device, bellow the Patch Browser, the "Matrix Setup" section is situated. As you'd expect, changes you make here have an impact on the chord matrix, only if it is enabled.

1. **Offset:** The step that Mercury will assert as the start of the Matrix pattern.

2. **Steps:** The number of the steps which make up a pattern. After the last step, selected using this setting, has been sequenced, Mercury will restart the pattern from the beginning.

   Note that the last step of a pattern is always the one right before that which was set by the offset. For example, a pattern of 16 steps, and an offset of 7, will cycle starting at step #7, then play up to step #16, return to step #1 and finish at step #6.

   Offsets higher than the step count are allowed, but the resulting offset is the modulo from the division offset : steps. For example, offset 19 in a pattern with 16 steps will result to 19 mod 16 = 3, the 3rd step In other words.

3. **Parameter Select:** This controls what the Matrix parameter row displays. The parameter row can be used to edit the following values, which are in fact the values of this setting:

   a. Velocity: The parameter row indicates the velocity settings for all steps.

   b. Tile: The parameter row indicates the tiling (legato) between steps.

   c. Parameter 1-4: The parameter row exposes the values on four different parameters, for each step. You can assign the CV outputs of these parameters found at the rear panel, to the target CV inputs

of any device.

3.7. The Chord Matrix

In the middle of the device, the dominant place has Mercury's chord matrix. Please refer to Chapter 5.3 of the manual, for more information on how to design chords using this feature.

The components of the matrix are from top to bottom:

1. **Step LEDs:** A series of 32 LEDs, that Mercury uses to display the currently played step and the length of the pattern.

2. **Chord LCD buttons:** A grid of 32x12 buttons forming Mercury's chord designer. The 32 columns represent the available 32 steps of a pattern, while the 12 buttons represent the 4 different chord notes in 3 octaves.

3. **Parameter Row:** Right under the Chord LCD buttons, the parameter row displays a set of 32 LCD fader style controls, that allow the user to edit, per step, various parameters.

Right bellow the matrix group, Mercury exposes controls for configuring the device arpeggiator. The controls are divided into five sections. These are:

3.8. Pitch

This section deals with the overall transpose of the input.

a. **Oct (Octave):** You can set the global octave pitch to +/-2 octaves, using this knob.

b. **Semi (Semitone):** You can set the semitone offset of the pitch to a range of -/+11 semitones.

3.9. Arp Range

While "Pitch" section controls the constant pitch transposition of the input, the "Arp Range" controls the range and the way transposing is done between steps.

1. **Range:** This knob sets the maximum allowed range of the transpose. The setting number denotes an octave. So setting it for example to 4 would mean that the arpeggiator can transpose the original material from the base octave, and up to four octaves.

2. **Bidir (Bidirectional):** This button enables you to use bidirectional transpose. By default (with "Bidir" switch disabled), the arpeggiator will transpose only to octaves above the base one. When you enable the "Bidir" switch the arpeggiator will transpose above *and* below the base octave.

If you play a C2 note f.e. and set the "Range" to 2, without "Bidir" enabled the arpeggiator will transpose between C2 and C3. With "Bidir" enabled tough the arpeggiator will transpose around C2 - that is from C1 to C3.

3. **Mode:** The mode defines the way that transposing will occur between steps. There are four different Arp Modes:

    a. **Up:** The arpeggiator will start transporting one octave up per step until it reaches the highest octave of the range. Then the process will restart from the lower octave.

    b. **Down:** The arpeggiator will start transporting one octave down per step until it reaches the lowest octave of the range. Then the process will restart.

    c. **Alternating:** The arpeggiator will start transporting one octave up until it reaches the highest octave of the range. Then it will start the reverse procedure, transporting one octave down until it reaches the lowest octave. The process is then repeated.

    d. **Random:** The arpeggiator will transport between octaves randomly inside the given range.

3.10. Timing

The timing section, is dedicated the configuration of settings, that deal with various timing operations of the arpeggiator.

1. **Sync:** The "Sync" switch, determines whether the step sequencing of the arpeggiator will occur in tempo / musical units (when enabled) or time units (when disabled).

2. **Rate:** The "Rate" knob sets the execution period of the sequencer. In other words how often will a step be triggered. According to "Sync" button you can set the arpeggiation rate to either musical / tempo units or time units.

3. **Gate (Gate Length):** This setting determines the time that the gate will remain open for each step. The value is expressed as a percentage of the "Rate" time unit. At 100% the gate remains fully open until the next step.

    Note that for a step that's tiled from the matrix, this setting has no effect, and the gate closes at the first succeeding non-tiled step.

4. **Shuffle:** This knob controls the shuffling (syncopation) between steps. The default setting is 50, which means that no shuffling takes place. Higher values will cause odd steps to stall for a short period, thus adding a "groove" to the sequence.

3.11. Velocity

The Velocity section is where Mercury calculates all velocity values, and forms the final gate values to forward to the CV outputs. Three different values are calculated:

a. Key Velocity originating from the MIDI key press.

b. Chord Matrix Velocity originating from the parameter row Velocity values.

c. Value originating from the "Amt" knob of the "Velocity" Section.

1. **Mode (Velocity Mode):** Sets the method that matrix will perform to calculate the final result. There are four different methods:

   a. **Fixed:** Only the Chord Matrix Velocity is calculated. The "Amt" Knob acts as a volume knob, multiplying the velocities of the steps by a range between 0 and 1.

   b. **Add:** This is just like the "Fixed" mode, with the exception that the final value is added to the MIDI Key Velocity.

   c. **Multiply:** The "Multiply" mode, multiplies the values from all MIDI, Chord Matrix and Amt values.

   d. **Balance:** "Balance" mode uses the "Amt" knob to calculate a balanced value between the Chord Matrix (fully left) and the MIDI (fully right) velocities.

2. **Amt (Amount):** This knob has different effect to the velocity calculation according to the "Mode" setting (see above).

3.12. Param. CV (Parameter CV)

This section provides settings that affect the four custom parameters the values of which you can set from the matrix parameter row. The four custom parameters are transmitted as a set of four CV outs for each voice. The user can adjust two settings for each of these parameters:

1. **BP (Bipolar Mode):** Enabling the bipolar mode will cause the selected parameter to expand the step values into both negative and positive CV values (above and below zero). When disabled the parameter will provide only positive values.

2. **Amt (Amount):** The amount knob sets the allowed range of the CV out signal. This is identical to the trim knob.

4. The Back Panel

Mercury's Back Panel exposes an large number of CV jacks, for both input and output purposes. The CV inputs and outputs are grouped into 3 distinctive sections. These are:

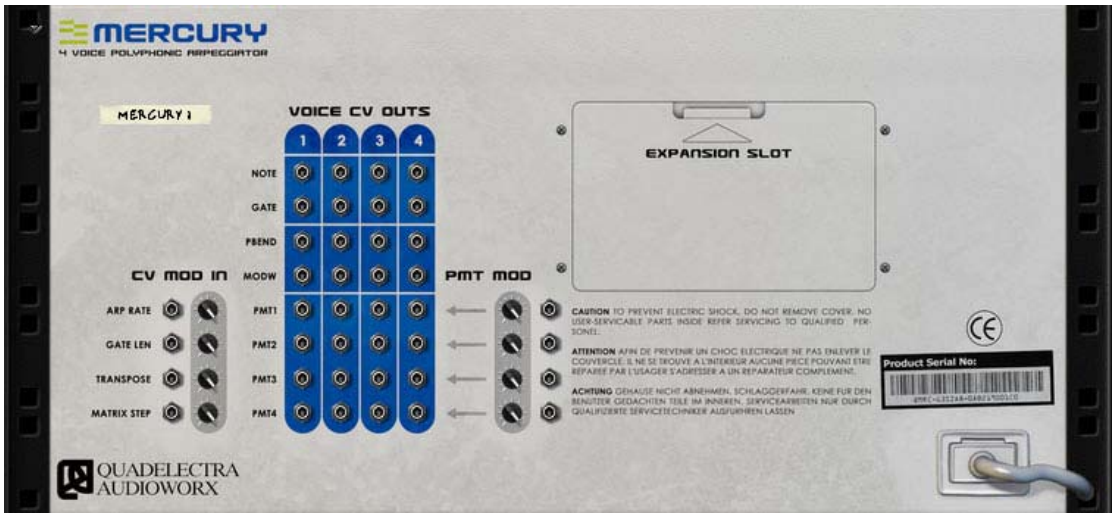


Fig.3a: Mercury Back Panel

4.1. CV Mod In (CV Modulation Input)

The "CV Mod In" (CV Modulation Input) accepts CV signals from other devices to control various Mercury parameters. The controllable parameters are:

1. **Arp Rate:** Controls the Rate of the Timing section, and allows a foreign device to control how "fast" or "slow" the step change will occur. If the device's Rate parameter is synced to the song, the CV input is rounded to the nearest musical value. For a non-synced rate the CV input modulates the number of milliseconds of the Rate setting.

2. **Gate Len (Gate Length):** Controls the Gate parameter from the Timing section, allowing a foreign device to control the length of the gate.

3. **Transpose:** This input allows the CV out of a foreign device to control Mercury's global pitch transpose. This CV input does not reflect to a specific parameter in the front panel. It rather allows the transposing of +/-24 semitones from the original setting, provided by the Octave / Semitone knob pair in the Pitch section.

4. **Matrix Step:** The final modulation input, allows a foreign device to use its CV out to control which step will be executed by the matrix, overriding the original forward-only scanning.

   For example you can use the CV out of a sinewave LFO to enforce the chord matrix steps to play forward and backward, or use the Reason Matrix device to select particular steps from Mercury's pattern.

   This is very handy, when you want to create variations in a Mercury matrix pattern.

Note that in all cases the CV input signal for these modulation targets is allowed to contain, both positive or negative values that will either increment or decrement the value of the controlled parameter, set in the front panel.

4.2. Voice CV Outs

These are the main CV outs that Mercury uses to sequence the four instruments used (and called) as "Voices". Again, you'll notice that the formation of these outputs is a 4 x 8 matrix.

The 4 columns represent the four voices, with each voice dedicated -but not necessarily used unless you choose so- by a single instrument.

The 8 rows are the parameters that Mercury controls for each voice:

1. **Note:** Sends Note / CV signals to the target voice. Connect this to target device "CV" input.

2. **Gate:** Sends Gate signals to the target voice. Connect this to target device "Gate" input.

3. **PBend:** Controls the Pitch Bend wheel of the target device.

4. **ModW:** Controls the Modulation wheel of the target device.

5. **Pmt (1-4):** These are a series of four parameters per voice, to which you can assign, up to 4 parameters for each voice. Mercury will control these parameters through the Parameter Row of its matrix.

4.3. Pmt Mod (Parameter Modulation)

The rightmost group is a set of CV inputs. These inputs modulate the values of the four custom parameters. So you can use an LFO to further modify the step values of a custom parameter.

5. Features

5.1. The Auto Chord Function

Mercury offers an auto chord function very useful for beginner users and live performances. Mercury's auto-chord system follows the Yamaha specification.

The device builds the generated chords according to the following rules:

1. The highest MIDI key is used to determine the tone of the chord. Once this happens, Mercury assumes that the use of a major chord is intended.

2. If a black key is pressed, bellow the highest MIDI key, then Mercury will turn the chord into a minor.

3. If a white key is pressed, bellow the highest MIDI key, then Mercury will turn the chord into a seventh.

The following illustration shows some auto chord examples:

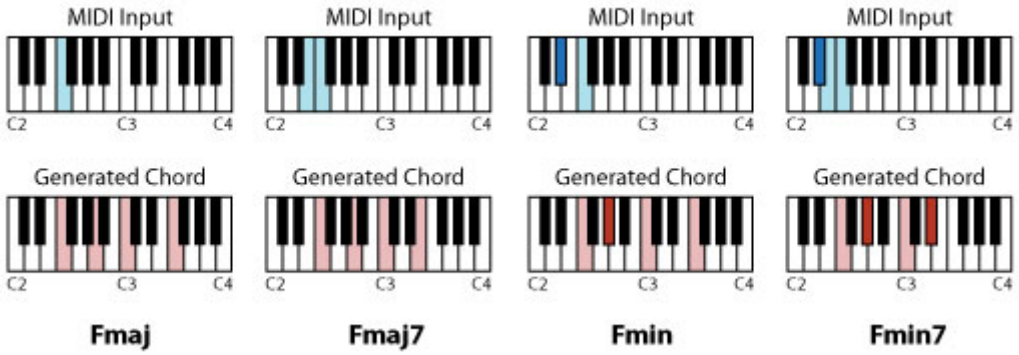


Fig.4-1a: Examples of MIDI key inputs (keys pressed) and Auto-Chord generated chords.

As mentioned before Mercury starts input transformation with the auto chord generation. So its the generated notes from that process -and not the source ones- that are subjected to voicing, scale conforming and further processing in general.

The order of the generated auto-chord notes is always from the lowest to the highest.

5.2. Latching

Latching Mode enables the user to sustain played notes, without keeping the corresponding MIDI keys pressed. This is a very useful feature for live performances where you -as a performer- can have Mercury play a sequence forever just by pressing the desired chord for an moment, and then withdraw your hand from the keyboard to keep playing your music, on some other instrument.

Latching follows these rules:

- When you press instantly a chord without Mercury playing, you activate / start the sequencer into processing / triggering the events for the chord

that is played.

- When you press again instantly the same chord while Mercury is playing, you deactivate / stop the sequencer.

- Pressing any other chord while Mercury is playing, will cause the sequencer to change the sequenced events to those of the new chord.

5.3. The Chord Matrix

Mercury's Matrix is laid out as a grid of 32x12 cells... Above the grid, there is a set of 32 LEDs used for step status indication, and bellow the grid, the parameter row is found; A set of 32 LCD fader style controls that allows the user to control extended parameters such as velocity, tiling etc.

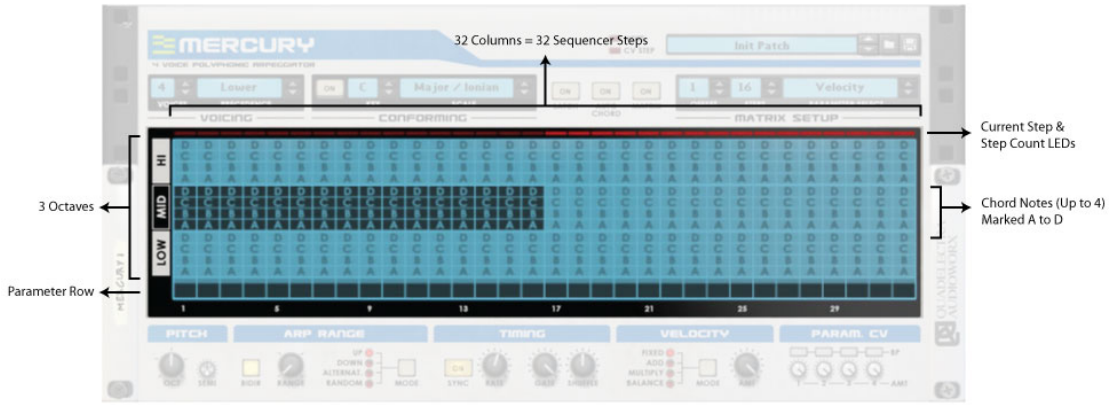


Fig.2-2a: Enter The Matrix!

The 32 columns of the matrix represent the 32 steps available to design a sequencing pattern, while the 12 rows represent the four notes, up to which a cord can have, in 3 octaves.

When you hit a chord, the four notes that Mercury has picked according to Voice Count and Precedence settings, are named after the letters A-D. Where "A" is always the lowest MIDI key, and "D" is the highest. If you press a chord with only 3 notes, letters A-C will trigger a sound, and "D" will remain silent. The same rule applies for a chord with 2 notes (A & B will trigger notes, C & D will become silent), or for a single note.

Inside the matrix, these four notes, A through D can be spanned across 3 octaves. These octaves are relative to the one that the MIDI key is pressed, "HI" signifies one octave above, and "LOW" one octave below. So playing a single note in C3 and setting button "A" to the "HI" octave will trigger C4. The same key will trigger C3 when you set "A" in "MID" and C2 in "LOW". You are not bound to use all the notes (meaning: enable all chord note buttons) of a chord.

Don't confuse voices (the instrument devices which Mercury sequences) with chord notes. You don't necessary need to use all letters when you create a chord. For example setting all "A"s in LOW, MID & HI octave will use three voices to trigger the single C3 key, as C2, C3 and C4. The first device will always play the lowest note of the Matrix step.

Judging from all of the above, a silent step is one where no chord notes are enabled.

Bare in mind that although you can enable more than four notes in a single step, Mercury will take in account, and use only the lowest four.

Bellow you can find some examples on how the Matrix transforms an Am7 chord:

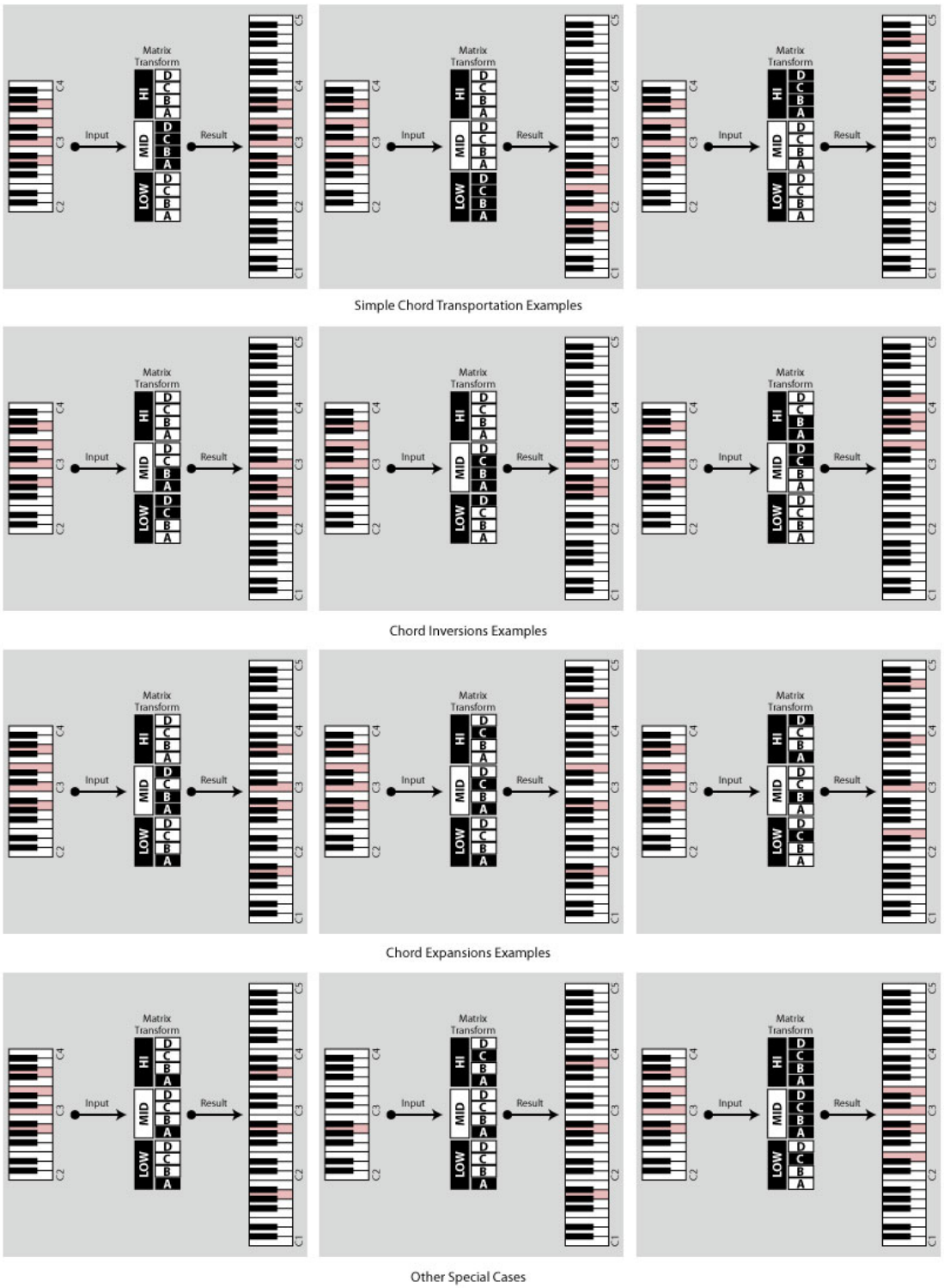


Fig.2-2b: Chord Matrix Transformation Examples

Matrix also offers ways for the user to control velocity, tiling (step legato) and extra CV parameters, using the parameter row. The parameter row is a set of 32 LCD faders -one for each step- just below the chord note buttons. To choose the setting you want to edit, you select it from the "Param Select", under the "Matrix Setup" section.

5.4. Factory Presets

Mercury ships with a large number of presets. These are either device specific Patches or Combinator patches.

The content is categorized in folders, and you can navigate there, by using Reason's file browser, and choosing "Rack Extensions" from the "Locations And Favourites" column, and then at the files column on the right, by double-clicking "Mercury 4 Voice Polyphonic Arpeggiator".

The shipped content is organized into these sections:

1. **Setups (Location: /Combi/Setups):** This folder contains basic setups for all Reason Native Instrument Devices. The idea is to quickly have a setup to use Mercury with its device specific patches (see below).

   You just create a setup of your favorite Reason Instrument, and load Mercury patches at the device inside the combinator. In detail, you'll find Combinator patches for the following instruments:

   a. Subtractor
   b. Maelstrom
   c. Thor
   d. NN-19
   e. NN-XT
   f. External MIDI Device.

2. **Instruments (Location: /Combi/Instruments):** These are predefined Combinator patches, composed from either single or multiple instruments. Their intent is to use them as parts of your tracks.

3. **Multis (Location: /Combi/Multis):** On the contrary, the "Multis" folder contains Combinator patches with build ups sounding almost like entire songs. Pressing a single chord with one of these patches will give you starting point to create your music.

4. **Patches (Location: /Patches):** This folder contains all device specific patches for Mercury. You can use them with any kind of instrument setup you like. Yet for your own convenience you can use the provided setup Combinator patches (described above) and load them from the Mercury device found inside each combi.

APPENDIX I: MIDI Control Chart

CC	Parameter
128	Voicing - Voices
129	Voicing - Key Precedence
130	Latch - Enable
131	Conforming - Enable
132	Conforming - Key
133	Conforming - Scale
134	Auto Chord - Enable
135	Pitch - Octave
136	Pitch - Semitones
137	Matrix - Enable
138	Matrix Setup - Offset
139	Matrix Setup - Steps
140	*<Unassigned>*
141	Timing - Rate
142	Timing - Rate Synced
143	Timing - Sync Switch
144	Timing - Gate Length
145	Timing - Shuffle
146	Arpeggiator - Bidirectional Mode
147	Arpeggiator - Octave Range
148	Arpeggiator - Arp Direction
149	Velocity - Amout
150	Velocity - Mode
151	Param CV - CV1 Bipolar Switch
152	Param CV - CV2 Bipolar Switch

153	Param CV - CV3 Bipolar Switch
154	Param CV - CV4 Bipolar Switch
155	Param CV - CV1 Trim Knob
156	Param CV - CV2 Trim Knob
157	Param CV - CV3 Trim Knob
158	Param CV - CV4 Trim Knob

TABLE OF CONTENTS

1. Introduction 3
1.1. Welcome To Mercury! 3
1.2. Mercury! A Polyphonic Arpeggiator For Reason. 3
2. A Dive Into The Deep 5
2.1. The Input Transform Module 5
2.2. The Sequencing Module. 5
2.3. Arpeggiator 6
3. The Front Panel 7
3.1. Note / CV Step Indication LEDs 7
3.2. Patch Browser 7
3.3. Voicing 7
3.4. Conforming (Scale Conforming) 8
3.5. Main Performance Switches 9
3.6. Matrix Setup 9
3.7. The Matrix 10
3.8. Pitch 10
3.9. Arp Range 10
3.10. Timing 11
3.11. Velocity 12
3.12. Param. CV (Parameter CV) 12
4. The Back Panel 13
4.1. CV Mod In (CV Modulation Input) 13
4.2. Voice CV Outs 14
4.3. Pmt Mod (Parameter Modulation) 14
5. Features 15
5.1. The Auto Chord Function 15
5.2. Latching 15
5.3. The Chord Matrix 16
5.4. Factory Presets 18
APPENDIX I: MIDI Control Chart 19
TABLE OF CONTENTS 21