

MULTI-HARP MODE

This feature is an extension to the TUNINGS menu in the ZPC software that lets you play an entire chord by just fretting one key on the fingerboard. This was written so that someone with little or no musical training could start playing full chords easily. For those with more musical training the Multi-Harp may be used to generate new and interesting harmonies and chord voicings that would otherwise be difficult or impossible to achieve.

The Multi-Harp works like an Autoharp in that you select a key then strum the strings, yet you have programmable control over a *lot* of chords by simply selecting them on the fingerboard. The 144 keys may each be programmed with a different chord. In the STRUMMING mode the notes of each chord will play individually as you strum the Triggers. There are a lot of possibilities for melodic variations depending on the way you pick with your other hand. A full exploration of harmonic textures using the Multi-Harp could take many years if not a lifetime.

The individual fingerboard-keys are assigned chords of up to 6 notes. It is also easy to choose a chord-type and a root-note and "cast" the chord chromatically up the string, allowing that chord-type to be played in other keys. Multiple keys may also be played at the same time to create fuller chord textures. The chords may be programmed with individual notes or you can select from a menu of about 40 chord-types and generate them automatically.

You can create a mapping system that lays chords out over the fingerboard using any logic you like. For instance, all of the chords in a song may be grouped together in a tight cluster, or instead chord families may be assigned to individual strings. Some wonderful harmonic concepts can be easily explored and more readily understood by encoding a group of notes to a single key. If the chording relationship between adjacent keys is mapped in some consistent format you quickly learn to recognize the sounds of the key-combinations and their relationships. By playing more than one key at a time some *really* complex harmonies may be easily created with a minimum of effort. In fact, if you play too many keys together the harmonic fabric becomes simply noise very quickly.

We've set this up as an extension to the ZPC OS by changing the fingerboard's keymap assignment variable from a single map that is stored with each Song preset to a set of 8 maps per each Song, of which a group of 6 adjacent maps are selected for building chords. The additional two maps may be used for additional Zones and layers. When a Song setup is just intended to play string guitar for instance, only one keymap is used. As a reminder, a "keymap" is an edit-able table that assigns a MIDI note to each key. By layering six Keymaps over the fingerboard, a six-note chord is layered over each key.

Using the chord-per-key Multi-Harp Mode

Playing the Multi-Harp setup is very easy, however setting up the ZPC to use the chord-per-key feature may seem fairly complex. This setup can be saved into the User-preset Songs, so once it's configured you shouldn't need to do it again. Changing just the chord-maps will not require re-making the entire setup.

These are the settings involved:

- 1) Enter the FRETBOARD/SCAN-MODE menu and set "TRIGS:Cho". This says that each key will now play a six note Chord, one note per StringTrigger.

The Multi-Harp chording mode will only operate when the StringTriggers are strummed or when you hammer-on. Chords currently may not be played when the "TRIGS:Off" ("tapping" style).

- 2) If no chords have been set up previously, go to the UTILITIES/TUNING menu. On the line that says "CHORDS" press "GENERATE" to open the CHORD-GENERATOR window.

UTILITIES\ TUNINGS menu

b. Chord Generator.

Enter the UTILITIES \ TUNING \ CHORDS> GENERATE menu. In this menu you can select a set of six maps, a chord family, and a root note. Again, you can use softkey#5 to select string:fret, or you can "chase" to the desired key just by touching it.

If you select Frets:ONE and then press CREATE, a chord will be generated for THAT KEY ONLY, using the given Root note.

If you select Frets:ALL and then press CREATE, a chord will be generated for ALL THE KEYS ON THAT STRING higher than the selected fret-key, using the same chord family. The Root note will be used for the open string, and each fret up the string will be successively one note higher.

CHORDS> EDIT menu:

You can go directly from the TUNINGS menu to the manual editing menu by pressing the EDIT key.

By touching a key on the fingerboard, the selected string and fret will appear at the lower-left of the screen.

The six notes assigned to this key will be shown as they are programmed in the six consecutive maps.

The six maps concerned are shown in the upper-left of the screen such as "# 1-6".

The individual notes are shown for instance as "1: 50/ D3" which you would read as " Map#1, MIDI-note 50 (decimal), D3".

Press the softkey over the note you wish to edit and use the Up/Dn buttons or the joystick to change the value.

You can change maps by selecting the Map-number field at the upper-left and changing the value.

For a quick setup, go to UTILITIES > TUNING > CHORDS-GENERATE, select Maps# 1-6, and select Frets:ALL. Then press a key on string#1, select a chord family and root note, and press CREATE. Press a key on string#2, select a different chord family, and press CREATE.

Ditto for the four remaining strings and you've created 6 chord families, one per string. Now you can go back to individual keys and add or subtract notes, or replace the existing chords with entirely new chords.

HAMMER-ONS

Even though you are now playing an entire chord for each key, the fingerboard still responds as if it were in one of its basic performance modes, as far as key-polyphony and hammer-ons are concerned.

In the Guitar-TriggersOn Mode you can enable or disable hammer-ons. The notes that are played for the hammer-ons are programmed into Map# 7.

When the Scan-mode is set to Poly-TriggersOn then hammering a second key on a string will add the entire chord rather than replacing the first chord. Also, selecting two or more keys on a string and plucking will play both chords together.

When the Scan-mode is set to Poly-TriggersOff then the keys may be tapped in combination to yield an endless variety of block chords.

Performance Tips

1)The factory setups have two Multi-Harp Songs or presets;

2) If there are too many notes playing at a given key, (all six are programmed from the factory), you can turn off individual notes in the CHORDS-GENERATE/ EDIT menu by selecting the note and scrolling up to the *maximum* value. This is handy if you want to just play say, a root note on one string, with the chords residing on other strings.

“R-5-Ma-Mi” Chord setup:

Root-5: String1
Root-5 (up a 4th): string2
Major Triads: String3
Major Triads (up a 4th): String4
Minor Triads: String5
Minor Triads (up a 4th): String6

The purpose of this preset is to demonstrate the harmonic relationships of a given root note stacked with different triads. These relationships are fundamental to modern harmony and this is an easy way to explore some advanced concepts. You may wish to shut off all but the lowest root note for the bottom two strings in order to hear the harmony more clearly.

More UTILITIES\ TUNINGS> menu:

UTILITIES \ TUNINGS MENU

Up	Softkey#1	Softkey#2	Softkey#3	Softkey#4
Down	MAP: 6	TUNING>	PRESETS	EDIT
EDIT	Softkey#5	Softkey#6	Softkey#7	Softkey#8

The top line shows the Keymap-number at the left.

Softkey3: PRESETS selects the Tuning-preset screen for creating and editing standard guitar tunings built from the open-strings.

Softkey4: EDIT takes you to an edit-screen showing all of the notes assigned across a given fret. There you can either select the Fret-number and change it or simply touch a new fret on the fingerboard. You'll be editing a single Keymap in this screen.

Softkey7: Selects the Chords-Generate menu

Softkey8: Selects the Chords-Edit screen where you can edit an entire chord that is spread across six keymaps for the multi-Harp mode

UTILITIES\ TUNING\ TUNING> Preset screen

Up	Softkey#1	Softkey#2	Softkey#3	Softkey#4
Down	Map: 8	EDIT PRESET:	Guitar	RIGHT/LEFT
EDIT	Softkey#5	Softkey#6	Softkey#7	Softkey#8

- Softkey1:** Select the Map number
- Softkey2:** Select the Keymap-edit screen for this Map
- Softkey3:** Scroll through a standard tuning list
- Softkey4:** Toggle Left-hand or Right -hand tuning
- Softkey5:** Select the lowest string and reset its open-string note
- Softkey6:** Toggle between the fifth and fourth strings
- Softkey7:** Toggle between the third and second strings.
- Softkey8:** Select the top string

UTILITIES\ TUNING\ TUNING> PRESETS Keymap-EDIT menu

Up	Softkey#1	Softkey#2	Softkey#3	Softkey#4
Down	Map: 8	i: 35/ B1	ii: 40/ E2	iii: 45/ A2
	OPEN	iv: 5-/ D3	v: 55/ G3	vi: 60/ C4
EDIT	Softkey#5	Softkey#6	Softkey#7	Softkey#8

- Softkey1:** Select the Map number
- Softkey2:** Select the lowest string
- Softkey3:** Select string 2 (Ztar-numbering)
- Softkey4:** Select string 3 (Ztar-numbering)
- Softkey5:** Select the fret-number for editing
- Softkey6:** Select string 4 (Ztar-numbering)
- Softkey7:** Select string 5 (Ztar-numbering)
- Softkey8:** Select the top string

UTILITIES\ TUNINGS\ CHORD-GENERATE menu

Up	Softkey#1	Softkey#2	Softkey#3	Softkey#4
Down	MAPS #1-6	ROOT-5	ROOT: E3	EDIT
	ii: 1	FRETS: ALL		CREATE
EDIT	Softkey#5	Softkey#6	Softkey#7	Softkey#8

Softkeys 1-8:

- MAPS #1-6: Select a group of 6 consecutive maps here. 1-6 is the default.
- CHORD-TYPE: Select from 40 chord types (including "Root-5").
- ROOT: Select the Root-note for the chord. Strings are numbered i,ii,iii,iv,v, and vi.
Frets are numbered 0-24 with "0" being the open-string.
- EDIT: Opens the Chord-Edit screen for hand-editing the chord.
- KEY-LOCATION: Select the Fret-key for the chord or the lowest Fret-key for a string of the same chord.
- FRETS: *ONE*; a chord is generated for just this one key.
ALL; a chord is generated for all frets on this string above the selected Fret-key.
- CREATE: Generates the selected chord(s) to the selected key(s).

UTILITIES\ TUNING\ CHORDS> EDIT screen

Up	Softkey#1	Softkey#2	Softkey#3	Softkey#4
Down	# 8-13	8: 53/ F3	9: 57/ A3	10: 60/ C4
	ii: 1	11: 64/ E4	12: 72/ C5	13: 76/ E5
EDIT	Softkey#5	Softkey#6	Softkey#7	Softkey#8

Softkey1: Select the group of six Keymaps

Softkey2: Select the Note for the lowest Keymap in this set

Softkey3: Select the Note for the second Keymap in this set

Softkey4: Select the Note for the third Keymap in this set

Softkey5: Select the specific Fingerboard Key for editing

Softkey6: Select the Note for the fourth Keymap in this set

Softkey7: Select the Note for the fifth Keymap in this set

Softkey8: Select the Note for the sixth Keymap in this set