

Yamaha Expansion Voices and Instrument Definitions for Cakewalk/Sonar and PSRUTI

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1. Introduction

This paper explains how these voices, which are not installed by default in Yamaha keyboards, can be embedded by the user in instrument definitions for Cakewalk / Sonar and PSRUTI.

It is assumed that the user has already installed Voices in the keyboard using the Yamaha Expansion Manager (YEM). This only applies to Yamaha keyboard models where the YEM can be used, especially Tyros 2 upto Genos and later models.

This document does not contain any instructions on how to use the YEM, please refer to the official Yamaha documentation.

2. Expansion voices, an overview

In the case of Expansion Voices, a distinction must be made between Premium Voices, which originate from Premium Packs purchased from Yamaha, and Custom Voices, which are created themselves, by other users or by third-party manufacturers.

Premium Packs are imported into the YEM as .cpf files, while other Packs with Custom Voices are imported as .ppf files. Also T3/T4 Custom Voices (.uvm/.uvd) can be imported into the YEM to be installed afterwards in the keyboard.

All currently installed premium and custom voices can be found on the Tyros 5 or Genos in the folder "Expansion".

Premium Packs contain Premium Voices with fixed, still free voice addresses in the standard Preset Voices area. These addresses cannot be changed by the user. For the special pack, there is a list of Premium Voices in which the associated voice addresses are listed.

The addresses of Custom Voices, on the other hand, are in the following ranges:

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Custom melody voices: MSB = 63, LSB = 0 ... 127

Custom percussion voices: MSB = 62, LSB = 0 ... 127

The LSB assignment for the percussion voices of the packs must be monitored by the user himself: By default, a newly installed pack in the YEM always gets the lowest free LSB assigned. If you delete a pack in the YEM, the next installed pack gets the free LSB.

The user can freely change the LSB assignment; however, under "Change Bank Select LSB" only the pack currently marked in the YEM can be moved to another free LSB. Then you have to close this window (the YEM saves the new assignment). Then you can mark another pack and move it to a new LSB. In the order of the current LSB assignment the packs will be displayed in the folder "Expansion". The Premium Voices are then also displayed here.

3. The storage of voices in the keyboard

Each voice installed in the keyboard is assigned a voice address that consists of three numerical values in the range 0 to 127:

The MSB number, the LSB number and the voice number, which is often designated by PC, Patch, Prg# or program.

On the keyboard, the voice addresses of all voices can be displayed in the format "#MSB-LSB-PC"; on the Tyros5, under "FUNCTION - UTILITY - VOICE NUMBER", the parameter "HIDE" is set to "SHOW".

Cakewalk/Sonar, PSRUTI and the instrument definitions use so-called voicebanks instead of the values of MSB and LSB. Their numbers are calculated using the formula "128 times MSB + LSB". A voicebank can therefore record a maximum of 128 voices. With Yamaha keyboards and in the keyboard documentation only MSB and LSB are used as single values.

It should be noted that Yamaha uses the voice number from 1 ... 128 (as well as in the voice lists of the data lists). Cakewalk/Sonar, PSRUTI and the instrument definitions count the voice numbers from 0 to 127. To get this value, subtract 1 from the Yamaha number. This is especially important for Cakewalk/Sonar, PSRUTI and the instrument definitions.

4. The storage of voices in instrument definitions

The Cakewalk instrument definitions are structured text files that can be edited with a text editor (e.g. Windows editor). They consist of data blocks of different types and instructions that refer to these blocks.

For our purpose, the embedding of expansion voices in an instrument definition, the so-called voiceblocks are responsible, which contain the voicenumbers and voicenames, as

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well as a patch instruction assigned to each voicebank, which refers to the corresponding voiceblock.

When adding a new Expansion Voice to the instrument definition, you must search for the appropriate patch statement or, if it does not exist, insert it. In addition, the corresponding voiceblock must be extended or inserted if it is missing.

4.1 Embedding Premium Voices

How do I find the corresponding patch statement and voiceblock for an Expansion Voice installed in the keyboard in the instrument definition?

According to chapter 3 we first calculate the voicebank from MSB, LSB ; the new voicenummer must be reduced by 1.

This is now demonstrated using the premium voice "SY Wire" from Yamaha's Entertainment Pack voicelist for Tyros 5.

VOICE						Voicebank / Voice# Cakewalk
	Voice Name	Voice Type	Voice Number			
			MSB#	LSB#	Prg#(1)	
1	Jodel JoDILo	S.Articulation!	8	33	51	1057 / 50
2	Jodel LoLa	S.Articulation!	8	34	51	1058 / 50
3	Jodel Legato	S.Articulation!	8	35	51	1059 / 50
4	Jodelglueck	MegaVoice	8	1	51	1025 / 50
5	SY Wire	Cool!	104	1	104	13313 / 103
6	SY WirePitch	Cool!	104	2	104	13314 / 103
7	SY FMGuitar	Cool!	104	3	104	etc
8	SY Bell	Cool!	104	1	101	
9	HardPiano	Cool!	104	0	2	
10	KaiserPiano	Cool!	104	1	2	
11	KaiserBells	Cool!	104	2	101	
12	HardPianoBell	Cool!	104	2	2	
13	HardPianoBellLd	Cool!	104	3	2	
14	WirePiano	Cool!	104	4	2	
15	YoungPianoBells	Cool!	104	5	2	
16	HillWire	Cool!	104	4	104	
17	HillWireLead	Cool!	104	5	104	
18	SuperBell	Cool!	104	3	101	
19	SuperBellTub	Cool!	104	4	101	
20	HillBelly	Cool!	104	5	101	
21	SchlagerKit	Live!Drums	127	0	63	
22	OrchHit1	Cool!	104	0	56	
23	OrchHit2	Cool!	104	1	56	
24	OrchHit3	Cool!	104	2	56	
25	OrchHit4	Cool!	104	3	56	
26	OrchHit Menu	Cool!	104	4	56	
27	Crowd Legato	S.Articulation!	8	36	51	
28	Crowd	MegaVoice	8	0	58	
29	Entertainer FX	Live!SFX	126	0	108	
30	Tusch FX	Live!SFX	126	0	109	

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To the right of the table, I have added the voicebank numbers and voice numbers required in the instrument definition according to section 3; for our case 13313 and 103.

You open the .ins file with the PC editor (e.g. Notepad) which contains the instrument definition for the Tyros 5 and search for .Instrument Definitions and then the text line [Tyros5] which refers to the keyboard model. Then follow all other references for Tyros 5 as well as the patch instructions.

Patch instructions have the format "Patch[<Voicebank>]=<Voiceblock>".

The voicebank number is <Voicebank>, calculated from MSB and LSB (here 13313), and the voiceblock number is <Voiceblock>, the name of the corresponding voiceblock.

The valid patch instruction in our case is obtained by searching for "Patch[13313]=" with the editor. We find the line

Patch[13313]=Tyros5 Bank 1 with the voiceblock name "Tyros5 Bank 1".

The corresponding voiceblock can then be found by searching backwards for "[Tyros5 Bank 1]".

This voiceblock has the following appearance

```
[Tyros5 Bank 1]
0=Live! MidigrandSyn {T} (Legacy)(Piano)
2=Live! MIDIGrandPad {T} (Legacy)(Piano)
3=Natural! CocktailPiano {T} (piano)
5=Cool! MidnightDX. (E.Piano)
11=Sweet! _Vibraphones {T} (percussion)
15=Regular _Zither1 {T} (A.Guitar)
17=Cool! _WhiterBarsSlow {T} (organ)
18=Cool! _AllBarsOutSlow {T} (organ)
19=Live! GrandJeu {T} (OrganWorld)(Concert)
21=Regular _Clari8'&4' {T} (Accordion)
26=Regular _LoungeGuitar {T} (Legacy)(E.Guitar)
32=Regular _AcousticBass {T} (Bass)
33=Cool! VintageRound {T} (Bass)
34=Regular _VintagePick {T} (Bass)
38=Regular _KickBass {T} (Legacy)(Bass)
39=Regular _DarkBass {T} (Legacy)(Bass)
44=Live! RealTremoloSfz {T} (strings)
46=Regular _OrchestralHarp {T} (Percussion)
49=Regular _TheatreOrch {T} (Strings)
50=Regular _SoftEnsemble {T} (Pad)
51=Regular _80sPad {T} (Pad)
60=Live! SymphonyHorns1 (Brass)
61=Live! SwingHnsWarm {T} (Brass)
62=Regular _BrassProfit {T} (Brass)
68=Regular _Clarinet&Oboe {T} (Woodwind)
70=Regular _OrchWoodwind {T} (Woodwind)
71=Regular _Clarinet&Flutes {T} (Woodwind)
73=Regular _AltoFlutes {T} (Woodwind)
81=Regular _PWMLead {T} (Synth)
84=Regular _DetunedVintage {T} (Synth)
```

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```
87=Regular_Xtune {T} (Legacy)(Synth)
88=Regular_NobleMan {T} (Pad)
89=Regular_VaporPad {T} (Pad)
90=Regular_TranceSeq3 {T} (Synth)
94=Regular_Aerosphere {T} (Pad)
95=Regular_SpaceRider {T} (Pad)
97=Regular_EasternAir {T} (Legacy)(Synth)
99=Regular_FlyingHarmonics {T} (Pad)
101=Regular_CrossPhase {T} (Pad)
104=Regular_Nomad {T} (Synth)
122=Regular_TrancyNoise {T} (Synth)
126=Live! Applause2 {T} (DrumKit)
```

Before the equal signs = are the voice numbers (0 ... 127); then the real voice name up to the first space and then an addition to support the browse function for Cakewalk and PSRUTI, which is not important here. However, it makes sense for the user to add appropriate attributes.

You can see that voice number 103 is not assigned in the voiceblock, which must be the case, because double assignments of voices are incorrect: Either the pack contains an invalid voice address or the instrument definition is incorrect.

With these preparations we can easily embed the Premium Voice "SY Wire" into the Tyros 5 instrument definition. We add the line "103=SY Wire" (here without attributes) to the voiceblock between the lines 101=... and 104=... in the voiceblock:

```
.
.
.
101=Regular_CrossPhase {T} (Pad)
103=SY Wire
104=Regular_Nomad {T} (Synth)
.
.
.
```

4.2 Embedding Custom Voices

For an understanding of this chapter, reference is made to the similar procedure for premium voices in Chapter 4.1.

According to Chapter 2, the voice addresses (MSB, LSB, voice number) are not fixed, but are assigned by the YEM during installation. MSB has the values 63 for melody voices and 62 for percussion voices. LSB can have values between 0 and 127; the voice number is determined by the YEM.

This means that when embedding up to 128 voiceblocks for melody voices and up to 128 voiceblocks for percussion voices together with the corresponding patch instructions could be present in the instrument definition.

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Since this is not the case in the existing instrument definitions, the user must insert the patch instructions and voiceblocks required for custom voices into the instrument definition. This is explained using two examples for Tyros5:

1. For MSB/LSB = 63/5 assigned melody voices the patch statement and the header of the voiceblock could look like this

Patch[8069]=CustomMelody5T5 and for the Voiceblock [CustomMelody5T5]

The voices must then be entered in the voiceblock with the instructions "<Voicenum>=<Voicename>".

2. For the percussion voices assigned to MSB/LSB = 63/0, the patch statement and header of the voiceblock could look like this

Patch[8069]=CustomPercussion0T5 and for the voiceblock [CustomPercussion0T5]

The required lines <Voicenum>=<Voicename> must then be entered in the voiceblock. To indicate that the Voicebank 8069 can only contain percussion voices, a so-called drum statement should be entered at the end of the Tyros5 area: Drum[8069,*]=1.

4.3 Embedding the note names of percussion voices.

If the names of drum instruments assigned to the notes of percussion voices or the sound names of SFX kits are known, it makes sense to embed them with so-called key instructions with references to special blocks containing the note names of the individual percussion voices. These can then be displayed by Cakewalk/Sonar and PSRUTI. How to do this, however, goes beyond the scope of this font. Here you have to refer to the german general structure description

"Das Format von Cakewalk Instrumentendefinitionsdateien" under <http://www.heikoplate.de/mambo> - Articles – German or look for an english one.

5. Final remarks

After editing the instrument definition, you should check the .ins file for structural errors using the InsfileChecker program. Download under <http://www.heikoplate.de/mambo> - Downloads - InsfileChecker.

PSRUTI contains a "Voicebank calculator" which can be selected in the program under Revoicing. Using the values of MSB and LSB the voicebank number (and vice versa) can be calculated.

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Expansion Voices, i.e. Premium and Custom Voices do not differ from the Preset Voices after installation in the keyboard... They can also be copied or edited via "Voice Edit" and then saved as so-called User Voices. With the PSRUTI "Voicefile Revoicing" function, midifiles can be revoiced without loss.

Finally, I would like to thank Christian Model for his detailed and helpful information on Expansion Voices, which I have incorporated into this description.

Heiko Plate