

Introduction

With the Yamaha-keyboard PSR-2000 we can save panel-setting into so-called registration-files. These files will be stored in the memory of the PSR-2000 or on a floppy disk and can be loaded into the memory later.

The aim of this article is a description of the internal structure of PSR-2000 registration-files. I have analyzed a little part only and some statements are not verified completely at this time.

Remark:

In this article I use the denotation of hexadecimal numbers with starting ,0x', for example 0xa4. Numbers in the dumps are hex. Numbers in the text as 34 are decimal ones.

About PSR-2000 registration files

The registrations of the PSR-2000 are organised in different banks. A bank has up to eight different registrations, which can be selected by eight panel-buttons. Each bank is identified by a user-defined bankname. Banks are not connected with bank-numbers. A registration-file is the archive of only one registration-bank. There is no file dsk.mng on the floppy disk.

The filename of a registration-file is

<bankname>.<icon-ID>.REG

The bankname is chosen by the user and may have up to 41 characters. Allowed are

small letters a b c d ... z ä ö ü

capitals A B C D ... Z Ä Ö Ü

blanks and specials ! # \$ % ' () + , . ; = @ [] ^ _ { } ~

Behind a delimiter ,,' follows an identifier for a special icon which is connected with the type „registration-file“. The icon-ID is ,S917' here and should not be changed.

Creating a registration-file, the user can select or deselect groups of special settings to be stored into the file. These are named by Style, Voice, Tune Trans, Scale, Harmony, Tempo, Pedal, Multipad, Song und Mic. The files have different numbers of informations therefore.

The structure of a PSR-2000 registration file

The file-header

The file starts with a file-header of 0x70 bytes, for example

```

00000000 5245 472D 3130 302D 3130 302D 3130 3030 REG-100-100-1000
00000010 5053 5232 3030 3078 0008 0040 0400 0000 PSR2000x...@....
00000020 0000 0070 0000 06E0 0000 0D50 0000 13C0 ...p.....P....
00000030 FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF .....
00000040 24FF FFFF FFFF FFFF FFFF FFFF FFFF FFFF $.
00000050 FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF .....
00000060 FFFF FFFF FF00 0000 0000 0000 0000 0000 .....

```

The 0x20 bytes beginning at byte-number 0x20 are eight 4-byte numbers, each is a byte-number of a so-called RGST-block for one of the registrations 1,2,...8. „FFFF FFFF“ denote non-existing registrations. The example here consists of the four registrations no. 1,2,3,4 only.

The RGST-block

The file, I have looked at, consists of 4 RGST-blocks with a length of 0x670 bytes each. This length is not constant in all registrations, the length is related to the number of setting-groups selected. The first RGST-Block of the example here:

```
00000070 5247 5354 0001 0670 1270 1800 0000 0000 RGST...p.p.....
00000080 0000 00E0 0000 0130 FFFF FFFF 0000 0140 .....0.....@
00000090 0000 01E0 0000 0250 0000 02C0 0000 0330 .....P.....0
000000A0 0000 03D0 0000 03E0 0000 0400 0000 0410 .....
000000B0 0000 0420 0000 0450 FFFF FFFF FFFF FFFF ... .P.....
000000C0 0000 0460 0000 0570 0000 0680 0000 06A0 ...`...p.....
000000D0 0000 06C0 FFFF FFFF FFFF FFFF FFFF FFFF .....
000000E0 4750 3030 0050 0000 4E65 7752 6567 6973 GP00.P..NewRegis
000000F0 7400 0000 0000 0000 0000 0000 0000 0000 t.....
00000100 0000 0000 0000 0000 0000 0000 0000 0000 .....
00000110 0000 0000 0000 0000 0000 0000 0000 0000 .....
00000120 0000 0000 0000 0000 0000 0000 0000 0000 .....
00000130 4750 3031 0010 0000 0100 0200 007F 0000 GP01.....
00000140 4750 3033 00A0 0000 002E 7F10 2A32 6440 GP03.....*2d@
00000150 4040 4040 0036 3602 FF00 0000 0000 0000 @@@@.66.....
00000160 0000 0000 0000 0008 334F 442C 1F27 4264 .....3OD,.'Bd
00000170 4040 4024 5C52 4440 4040 4040 4040 4040 $$$\RD@@@@@@@@
00000180 4040 4040 4040 4040 4040 403C 4640 4040 @@@@@@@@@@@@<F@@@
00000190 4040 403C 4440 4840 1C14 002A 2800 1828 @@@<D@H@...*(.(
000001A0 0000 0A22 0C00 0000 0000 0000 007F 0000 ...".
000001B0 7F7F 7F7F 7F00 7F7F 0000 0000 0000 0000 .....
000001C0 7F7F 7F7F 7F7F 7F7F 7F00 507F 0050 0000 .....P..P..
000001D0 2100 751B 0076 1B00 7112 0074 4200 0000 !.u..v..q..tB...
000001E0 4750 3034 0070 0000 7F00 7001 6C40 4040 GP04.p....p.l@@@
000001F0 4040 4000 7E64 4040 0000 4040 4000 4000 @@@.~d@@..@@@.@.
00000200 1046 2F42 0200 0000 0000 0020 0000 007F .F/B.....
00000210 0000 007F 0000 0000 0000 0000 0000 0000 .....
00000220 0024 0000 0000 0000 0000 0000 0000 0000 .$.....
00000230 0000 0000 0000 0000 0000 0000 0000 0000 .....
00000240 0000 005F 0700 0700 0000 0000 0000 0000 ..._.
00000250 4750 3035 0070 0000 0000 7605 6640 4040 GP05.p....v.f@@@
00000260 4040 4000 6E64 4040 0000 4240 4200 4000 @@@.nd@@..B@B.@.
00000270 1040 2F68 021A 0000 0000 0020 0000 007F .@/h.....
00000280 0000 007F 0000 0000 0000 0000 0000 0000 .....
00000290 0030 0000 0000 0000 0000 0000 0000 0000 .0.....
000002A0 0000 0000 0000 0000 0000 0000 0000 0000 .....
000002B0 0000 0000 0000 0000 0000 0000 0000 0000 .....
000002C0 4750 3036 0070 0000 0000 7000 6C40 4040 GP06.p....p.l@@@
000002D0 4040 4000 7F3E 4040 0000 4040 4001 4000 @@@.>@@..@@@.@.
000002E0 106C 2F60 0200 0000 0000 0020 0000 007F .l/`.....
000002F0 0000 007F 0000 0000 0000 0000 0000 0000 .....
00000300 0024 0000 0000 0000 0000 0000 0000 0000 .$.....
00000310 0000 0000 0000 0000 0000 0000 0000 0000 .....
00000320 0000 0000 0000 0000 0000 0000 0000 0000 .....
00000330 4750 3037 00A0 0000 0000 0000 FFFB 0000 GP07.....
00000340 FFFF 6301 0001 0000 0000 4001 7F00 0000 ..c.....@.....
00000350 FFFB 0000 0000 FFFF 0110 0040 0000 0000 .....@.....
00000360 FFFB 0000 0000 FFFF 4208 0040 0000 0000 .....B..@.....
00000370 007F 0000 0015 FFFF 4210 0100 0000 0000 .....B.....
00000380 007F 0000 0006 FFFF 0311 0000 0000 0000 .....
00000390 007F 0000 0006 FFFF 0311 0200 0000 0000 .....
000003A0 0000 0000 0000 FFFF 4000 7F00 0000 0000 .....@.....
000003B0 007F 0000 0000 FFFF 4000 7F00 0000 0000 .....@.....
000003C0 0000 0000 0000 0000 0000 0000 0000 0002 .....
000003D0 4750 3038 0010 0000 0000 0000 0000 0000 GP08.....
000003E0 4750 3039 0020 0000 4040 4040 4040 4040 GP09. .@@@@@@@@
000003F0 4040 4040 0000 0000 0000 0000 0000 0000 @@@@.....
00000400 4750 3041 0010 0000 0001 4802 0000 0000 GP0A.....H.....
00000410 4750 3042 0010 0000 0000 0078 00AE 0000 GP0B.....x.....
```

```

00000420 4750 3043 0030 0000 2300 0000 0000 0000 GP0C.0..#.
00000430 2300 0000 0000 0000 0000 0000 0000 0000 #.
00000440 0000 0000 0000 0000 0000 0000 0000 0000 .
00000450 4750 3044 0010 0000 6440 4040 4040 2100 GP0D....d@@@!.
00000460 4750 3130 0110 0000 443A 2F53 5459 4C45 GP10....D:/STYLE
00000470 2F50 6F70 2652 6F63 6B2F 5477 6973 742E /Pop&Rock/Twist.
00000480 5336 3036 2E73 7479 0000 0000 0000 0000 S606.sty.
00000490 0000 0000 0000 0000 0000 0000 0000 0000 .
000004A0 0000 0000 0000 0000 0000 0000 0000 0000 .
000004B0 0000 0000 0000 0000 0000 0000 0000 0000 .
000004C0 0000 0000 0000 0000 0000 0000 0000 0000 .
000004D0 0000 0000 0000 0000 0000 0000 0000 0000 .
000004E0 0000 0000 0000 0000 0000 0000 0000 0000 .
000004F0 0000 0000 0000 0000 0000 0000 0000 0000 .
00000500 0000 0000 0000 0000 0000 0000 0000 0000 .
00000510 0000 0000 0000 0000 0000 0000 0000 0000 .
00000520 0000 0000 0000 0000 0000 0000 0000 0000 .
00000530 0000 0000 0000 0000 0000 0000 0000 0000 .
00000540 0000 0000 0000 0000 0000 0000 0000 0000 .
00000550 0000 0000 0000 0000 0000 0000 0000 0000 .
00000560 0000 0000 0000 0000 0000 0000 0000 0000 .
00000570 4750 3131 0110 0000 443A 2F4D 554C 5449 GP11....D:/MULTI
00000580 2050 4144 2F47 7569 7461 7252 6966 6620 PAD/GuitarRiff
00000590 322E 5330 3938 2E70 6164 006C 0000 0002 2.S098.pad.l.
000005A0 8C04 12AA 8C2A E0C0 0000 0002 8C03 E972 .....*.r
000005B0 0000 0000 8C60 AFEB 8C60 AF6C 8C60 AFBC .....`...`.l.`.
000005C0 0000 0007 8C03 F6D4 8037 178E 8C06 6A40 .....7....j@
000005D0 0000 0000 0000 0B02 804D B05C 0000 0000 .....M.\....
000005E0 0000 0000 0000 0000 8C06 6B56 0000 0000 .....kV....
000005F0 0000 0000 FFFF FFFF 8C06 6B56 8036 2A7A .....kV.6*z
00000600 8C46 C2A8 8C46 C2A8 8036 3314 8C2B BFB0 .F...F...63...+..
00000610 0000 00FF 8C60 AEC0 0059 2A20 8C46 C2A8 .....`...Y* .F..
00000620 8036 3314 8C2B BFB0 8C46 C2A8 5477 6973 .63...+...F..Twis
00000630 742E 5336 3036 2E73 7479 0000 0000 0000 t.S606.sty.
00000640 0000 0000 0000 0000 0000 0000 0000 0000 .
00000650 0000 0000 0000 0000 0000 0000 0000 0000 .
00000660 0000 0000 0000 0000 0000 0000 8C46 C198 .....F..
00000670 803B 9F24 0000 0000 0000 0000 0000 0000 .;.$.....
00000680 4750 3132 0020 0000 0000 0000 0707 0000 GP12.
00000690 0700 0000 0000 0000 0600 0000 0000 0000 .
000006A0 4750 3133 0020 0000 0000 0000 0707 0000 GP13.
000006B0 0700 0000 0000 0000 0600 0000 0000 0000 .
000006C0 4750 3134 0020 0000 0000 0000 0707 0000 GP14.
000006D0 0700 0000 0000 0000 0600 0000 0000 0000 .

```

A RGST-block starts with a RGST-header, followed by a sequence of so-called GP-blocks of different lengths. Two bytes at byte-no 0x06, 0x07 are the length of the RGST-Block. The one byte at 0x08 is the number of GP-blocks in the RGST-block. Beginning with byte 0x10 we find a sequence of 4-byte addresses. These addresses are byte-numbers of the GP-blocks of the RGST-Block, relative to the beginning of the whole file. „FFFF FFFF“ denote non-existing GP-blocks.

Each GP-Block starts with a key like GP00, GP01,...and assembles a set of special data. The two bytes at 0x04 are the length of the GP-block. I suppose, that the lengths of the GP-Blocks are constant in all registrations. But we should use the the lengths and the pointers of the file instead of constant lengths. The following list is derived from some examples.

Additional Remarks

Selecting the setting-group Voice with non-selected Style, the voice Left is not stored in the registration. Selecting Style, with selected Voice or not, we will get the data of the voice Left-data in the registration.

Renaming a registration with the PSR-2000, the old registration-name will be stored at a later position in the block GP00 for a function „Undo“ perhaps.

Styles and Multipad are denoted as long filenames, for example „D:/STYLE/Pop&Rock/Twist“ or „D:/MULTI PAD/GuitarRiff“. The logical drive-ID's „C“ and „D“ adress the preset- and the flash-memory. Therefore it is very easy, to get the name of the style or multipad.

The style is stored twice: In the Style GP-block GP00 and in the Multipad GP-block GP11.

End