

# 5808/5916PIA-Ref User's Manual

## Digital Piano Reference

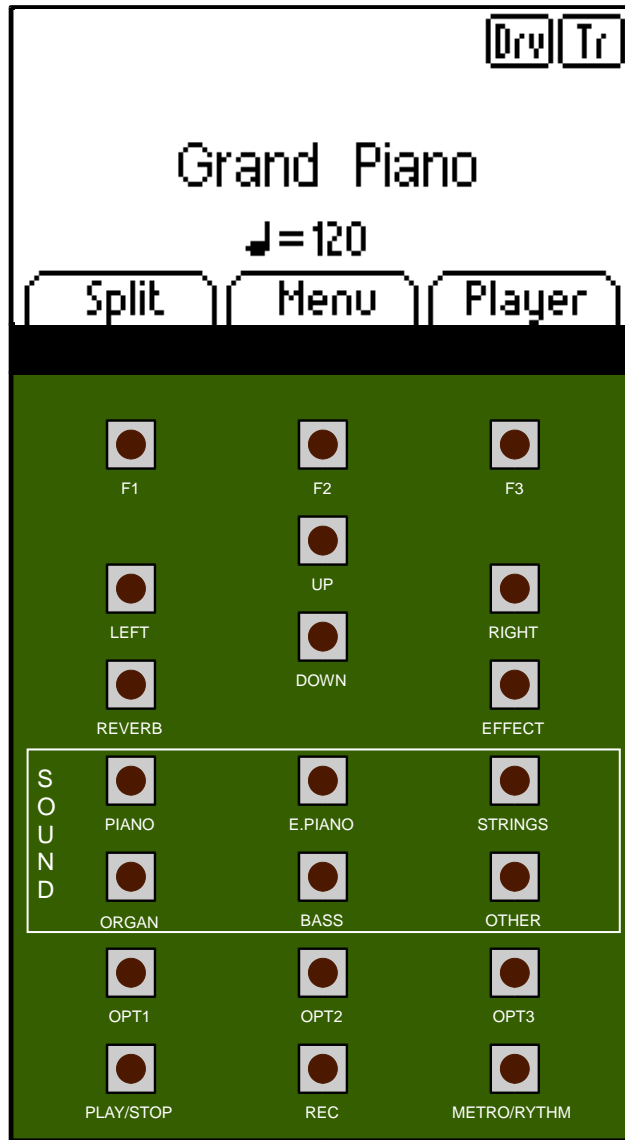
Version 1.02



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# 1. Button Reference



## 2. Basic Functions

### 2.1 Sound Select

You can select different Sound-Categories by pressing one of the six **"SOUND"** buttons". Pressing the button of the current selection again cycles through the different Sounds.

Alternatively you can cycle through the sounds of the current category by pressing **"UP/DOWN"** buttons.

Dual Sounds are available by pressing two **"SOUND"** buttons at once.



At this step the the **"F1"** button allow to cycle through Dual, Split or 4-Hand mode



Pressing a **"SOUND"** button in Dual Mode will change the First sound.

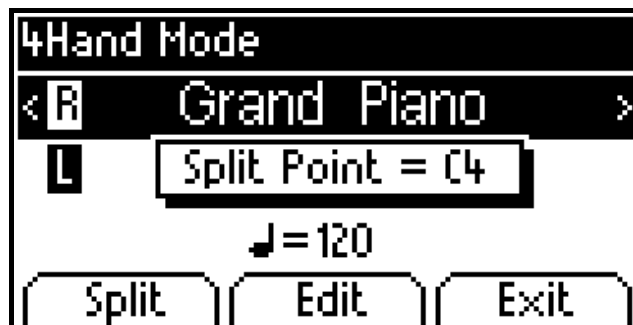
To change the Second sound, hold the **"F1"** Button or the First **"SOUND"** button and press the **"SOUND"** Button for the desired Second instrument.

Pressing a **"SOUND"** button in Split or 4Hand Mode will change the Upper sound.

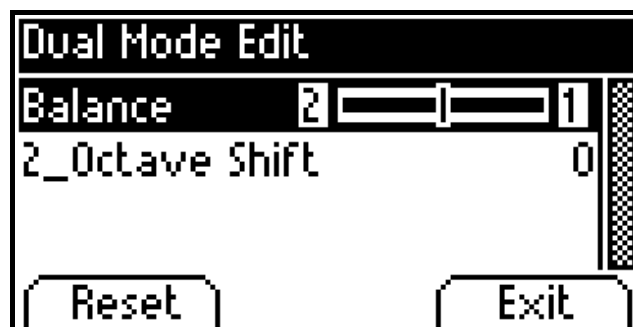
To change the Lower sound, hold the **"F1"** Button or the Upper **"SOUND"** button and press the **"SOUND"** Button for the desired Lower instrument.

Alternatively, changing Sounds can be done via the “UP/DOWN” and “RIGHT/LEFT” buttons.

To select the Split-point in Split or 4Hand Mode, hold the first Soft Button and press the desired Split Key.

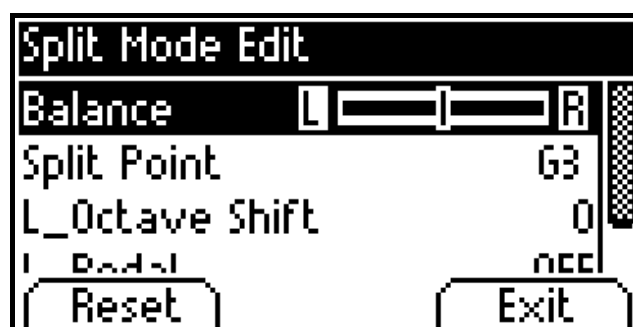


### 2.1.1 Dual Mode Edit



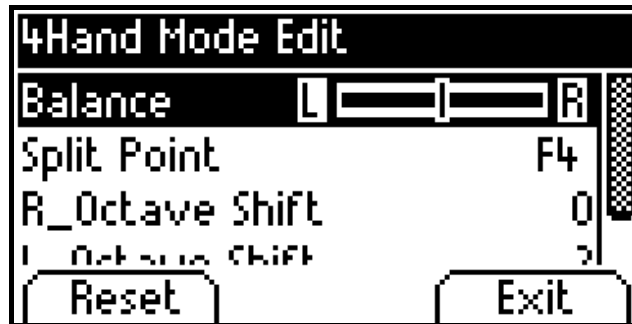
Balance	- Adjust balance between First and Second sound
2_Octave shift	- Adjust octave transpose for Second sound in range (-3,+3)

### 2.1.2 Split Mode Edit



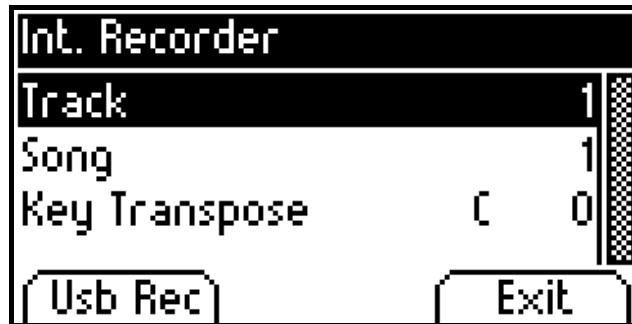
Balance	- Adjust balance between Left and Right sound
Split Point	- Adjust Split Point between Left and Right sounds
L_Octave shift	- Adjust octave transpose for Left sound in range (-3,+3)
L_Pedal	- Enable or disable pedals on Left sound
L_Octave shift	- Adjust octave transpose for Left sound in range (-3,+3)

### 2.1.3 4Hand Mode Edit



Balance	- Adjust balance between Left and Right sound
Split Point	- Adjust Split Point between Left and Right sounds
R_Octave shift	- Adjust octave transpose for Right sound in range (-3,+3)
L_Octave shift	- Adjust octave transpose for Left sound in range (-3,+3)

## 2.2 Recording



### 2.2.1 Recording internal song

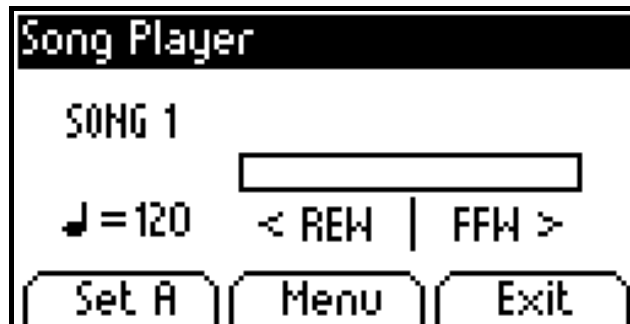
To start a recording, press the Record-Button. Recorder menu is displayed and “REC” Led blink.

From this menu you can:

- Select the Track to be recorded
- Select the Song to be recorded
- Set the Keyboard Transpose

Recording will start as soon as you play the first note.

Press the “REC” Button again to stop the Recording. Song Player menu is displayed



You can listen to your recording by pressing the “PLAY” button.

### 2.2.2 Song Player Menut

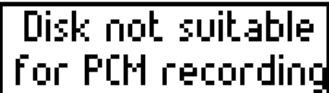


Track Mute >	- Select the Track(s) to be played
Song	- Select the Song to be played
Delete Song >	- Delete a Song
Key Transpose	- Set the Keyboard Transpose
Song Transpose	- Set the Song Transpose
AB Countin Bars	- Set the number of countin bar in Loop AB mode

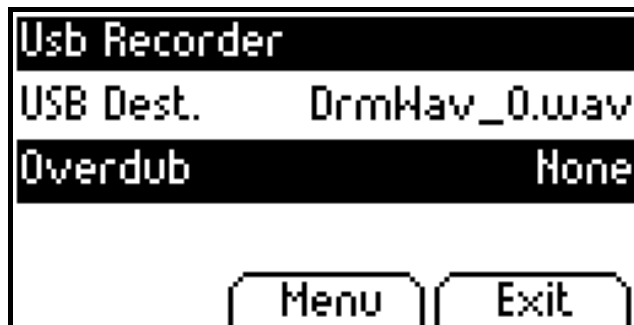
### 2.2.3 Recording audio file to Usb

Performance can be directly recorded to Usb stick in audio format. Audio recording is currently fixed to Stereo 16 Bit WAV file using current Sampling rate.

**Caution:** Not all Usb stick are compatible for real time stereo audio recording. When trying to record with a not suitable Usb stick, following message will be displayed



To display Usb Recorder Menu Press “**Usb Rec**” in Int. Recorder Menu:



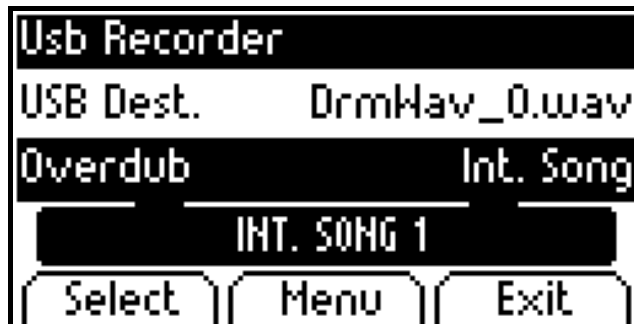
USB Dest.	- Set the name of destination file
Overdub	- Select the overdub mode

### 2.2.4 Recording without overdub

- Set Overdub parameter to “None”
- Press “**REC**” button to prepare recording
- Press “**PLAY/STOP**” button to start recording
- Press “**REC**” button to stop recording



### 2.2.5 Recording with internal song overdub



- Set Overdub parameter to "Int. Song"
- Press "**Select**" to choose the internal song that will be use as overdub source
- Press "**REC**" button to prepare recording
- Press "**PLAY/STOP**" button to start recording and playback of overdub source
- Press "**REC**" button to stop recording
- Press "**PLAY/STOP**" button to stop playback of overdub source

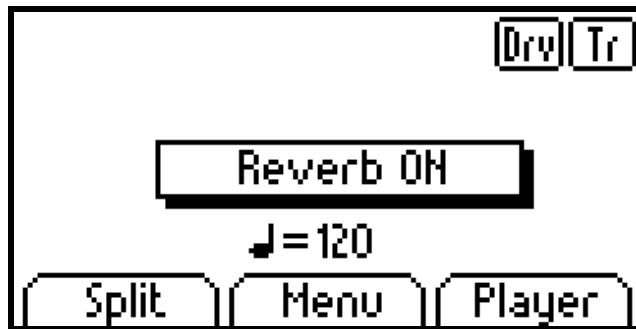
### 2.2.6 Recording with USB audio song overdub



- Set Overdub parameter to "Usb Song"
- Press "**Select**" to choose the Usb audio song that will be use as overdub source. It can be .mp3 or .wav file
- Press "**REC**" button to prepare recording
- Press "**PLAY/STOP**" button to start recording and playback of overdub source
- Press "**REC**" button to stop recording
- Press "**PLAY/STOP**" button to stop playback of overdub source

### 2.3 Reverb

You can toggle the Reverb ON and OFF by pressing the “REVERB” button.

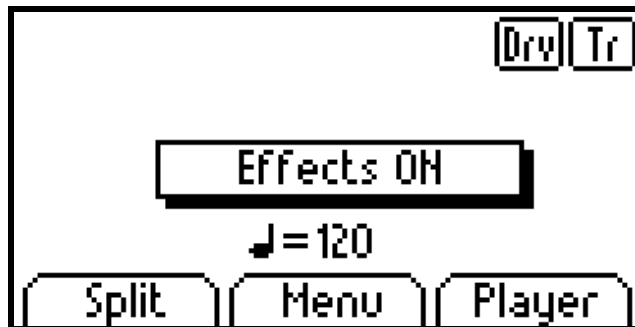


Long press will lead to the Reverb Settings Menu



## 2.4 Effect (Chorus/Phaser/Tremolo/Rotary)

You can toggle the Effect ON and OFF by pressing the “EFFECT” button.

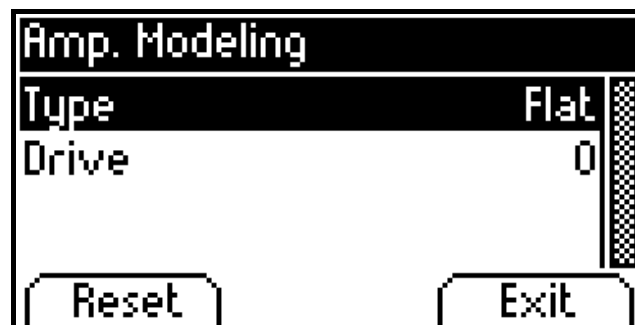


Long press will lead to the Effect Settings Menu



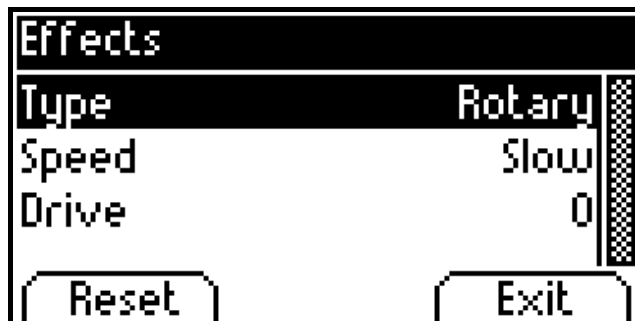
### 2.4.1 Amplifier Modeling

Pressing “Amp.Mdl” button leads to Amp. Modeling Menu as shown below:



## 2.4.2 Rotary effect

There is a special case when Effect Type “Rotary” is selected. Available effect parameters are specific as shown below:

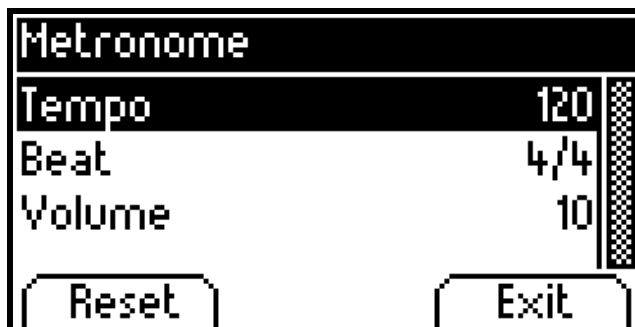


Note: Speed parameter can be also changed from “Slow” to “Fast” and from “Fast” to “Slow” by pressing Sostenuto pedal.

## 2.5 Metronome

You can toggle the Metronome ON and OFF by pressing the “METRO/RHYTHM” button.

Long press will lead to the Metronome Menu



From this menu you can:

- Select the tempo of the metronome
- Select the beat or a rhythm
- Adjust the metronome volume

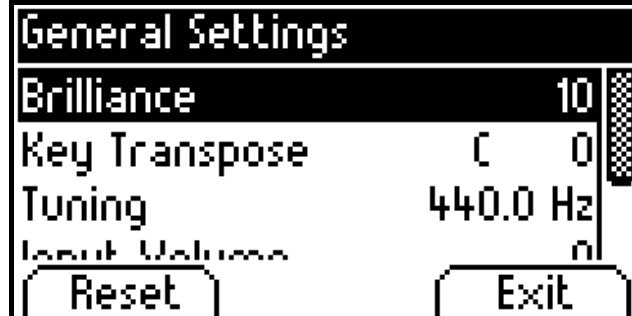
### 3. Function Menu

The Function menu and its sub-menus are reached by pressing the display button “Menu” in the main screen.



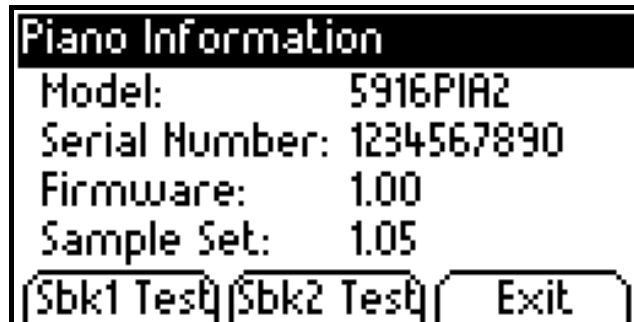
General Settings	>
Piano Settings	>
USB	>
MIDI Settings	>
System	>

#### 3.1 General Settings



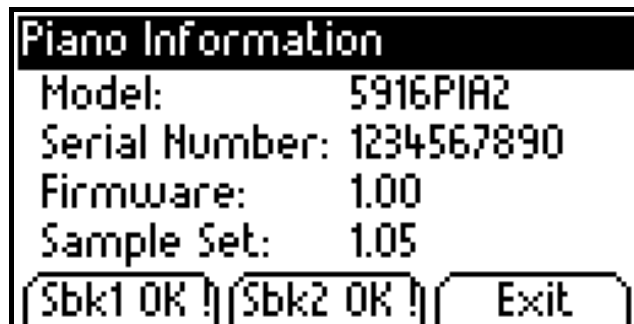
Brilliance	
Key Transpose	
Tuning	
Input Volume	
Input -> Reverb	
Piano Information	>

### 3.1.1 Piano Information

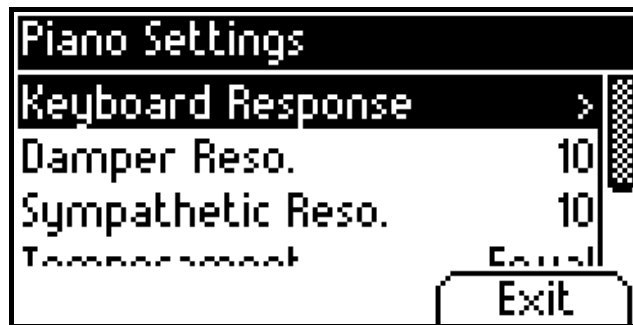


Press the “**Sbk1 Test**” button to check the integrity of GM sound bank. Pop-up message show progress and result is displayed by replacing the button text by “**Sbk1 OK !**” or “**Sbk1 ER !**”

Press the “**Sbk2 Test**” button to check the integrity of Piano sound bank. Pop-up message show progress and result is displayed by replacing the button text by “**Sbk2 OK !**” or “**Sbk2 ER !**”

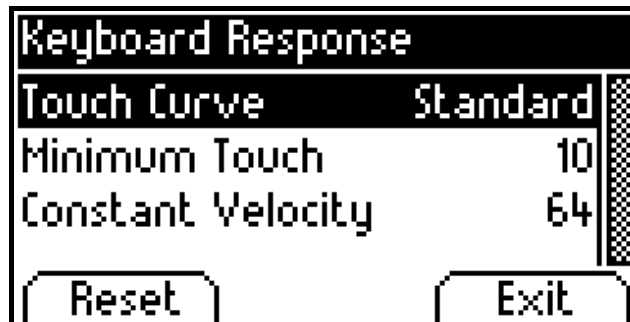


### 3.2 Piano Settings



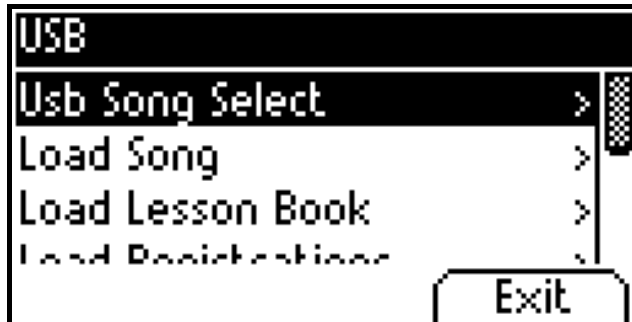
Keyboard Response	>
Damper Reso.	
Sympathetic Reso.	
Temperament	
Root Note	

#### 3.2.1 Keyboard Response



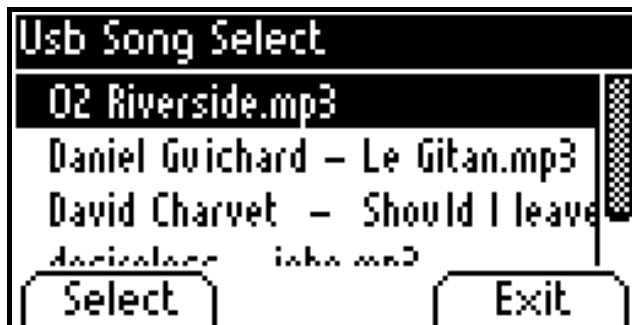
Touch Curve
Minimum Touch
Constant Velocity

### 3.3 USB



Usb Player	>
Load Song	>
Load Lesson Book	>
Load Registrations	>
Save Song	>
Save Registrations	>
Delete File	>

#### 3.3.1 USB Song Select



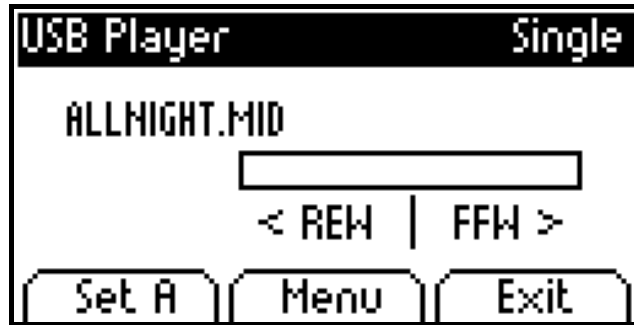
Use “Up”, “Down”, “Right” and “Left” buttons to scroll and to choose the MP3, Wave or Midi song you want to play, then press “Select”. It runs the USB Player screen

Case of MP3 or Wave file



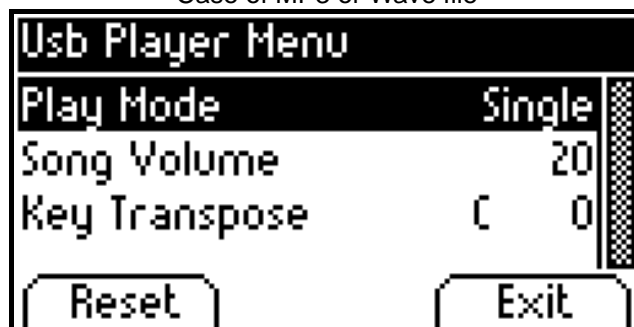


Case of Midi file



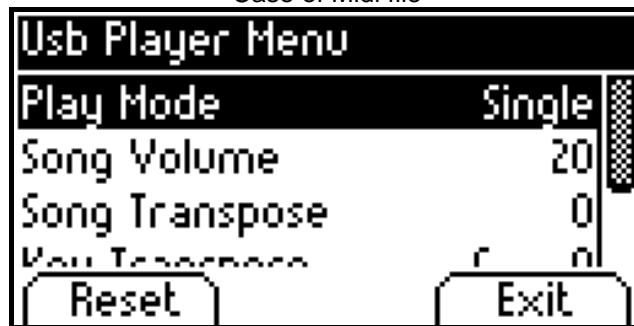
- Start playback by pressing “Play/Stop” button
- “Menu” button leads to “USB Player Menu”

Case of MP3 or Wave file



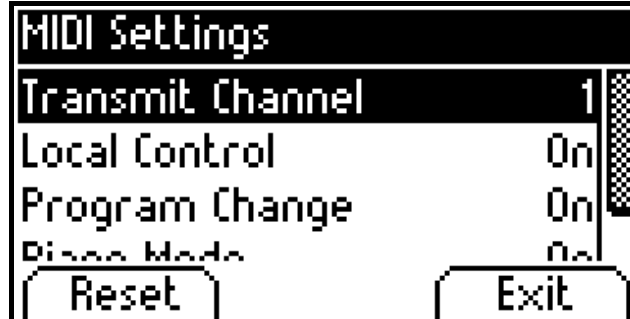
Play Mode	- Choose the way the songs of the current directory will be played. Options are: Single, Repeat, Repeat All, Random
Song Volume	
Key Transpose	

Case of Midi file



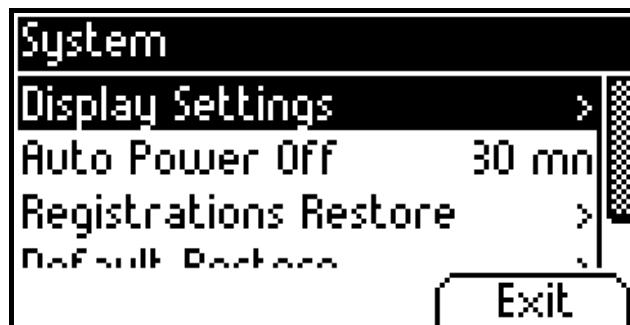
Play Mode	- Choose the way the songs of the current directory will be played. Options are: Single, Repeat, Repeat All, Random
Song Volume	
Song Transpose	
Key Transpose	
AB Countin Bars	- Set the number of countin bar in Loop AB mode

### 3.4 MIDI Settings



Transmit Channel	Midi Out transmit channel
Local Control	Local Control: On/Off
Program Change	Program Change transmit and receive: On/Off
Piano Mode	<p>Midi Implementation for Midi In and USB Midi IN. Select between simple Omni implementation and GM/GS implementation</p> <p>Piano Mode On: Only below events are handled:</p> <ul style="list-style-type: none"> <li>- Note On and Note Off in omni mode</li> <li>- Pedal Control Change (Damper, Sostenuto and Soft)</li> </ul> <p>Piano Mode Off: GM/GS implementation as described in: <i>SamVS-C GM2Synth Library.pdf</i>, §Detailed MIDI Implementation, but without System Exclusive messages support.</p>

### 3.5 System



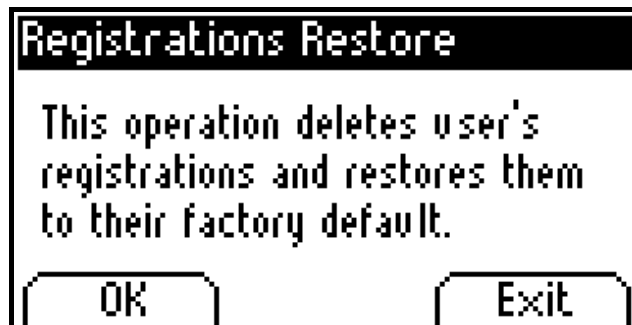
Display Settings	>
Auto Power Off	>
Registrations Restore	>
Default Restore	>

### 3.5.1 Display Settings

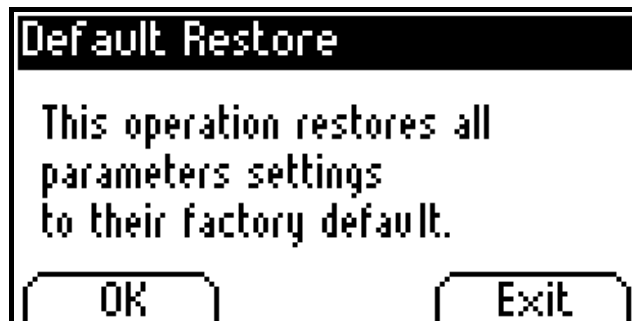


Backlight
Contrast
Invert

### 3.5.2 Registrations Restore



### 3.5.3 Default Restore



## 4. Registration Mode

Press the “**OPT1**” button to enter the Registration Mode.

In this mode you can:

- save the current settings of the instrument in one of the 18 registration memories.
- load instrument settings from one of the 18 registration memories.
- recover at any time the instrument settings as they were before entering the Registration Mode
- Save a User’s Default configuration that will be automatically loaded at power-up.
- Exit the Registration Mode by pressing the “**OPT1**” button again.

The display will depend on your current sound mode (Single, Dual, Split or Four Hands) and sounds selection.

See below example when entering Registration Mode from Dual Mode



### 4.1 Display information

#### 4.1.1 Status field

In right part of title bar, Status field shows which registration is currently loaded. Possible values are:

- “**A-1**” to “**A-6**” for 6 registrations available in Bank A
- “**B-1**” to “**B-6**” for 6 registrations available in Bank B
- “**C-1**” to “**C-6**” for 6 registrations available in Bank C
- “**None**”. No registration is loaded
- “**Default**”. User’s Default registration is loaded

#### 4.1.2 Sounds Info

In the middle of the display, the name of the sound(s) currently selected is(are) shown.

- If Dual mode, flag “**1**” or “**2**” precedes the sound name to indicate first or second sound.
- If Split or Four Hand mode, flag “**R**” or “**L**” precedes the sound name to indicate right or left sound.

## 4.2 Using Registrations

### 4.2.1 Save Registration

- Adjust the instrument settings you want to save before entering the Registration Mode
- Press "**OPT1**" to enter the Registration Mode
- Press "**SAVE**"



- Use "**BANK**" and "**SOUND**" buttons to select the memory location
- Press the "**RIGHT**" button to confirm. Registration is saved !

### 4.2.2 Load Registration

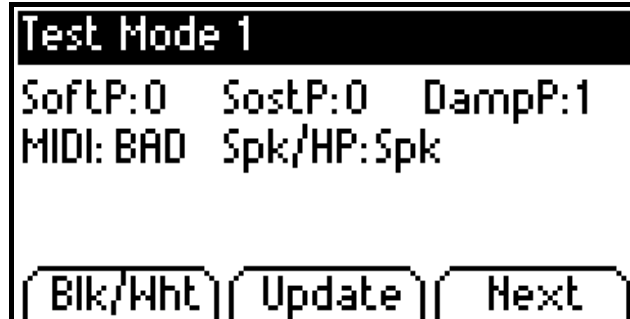
- Press "**OPT1**" to enter the Registration Mode
- Use "**BANK**" and "**SOUND**" buttons to select the registration you want to load



- By pressing again the "**SOUND**" button corresponding to the current loaded registration you can unselect the registration and recover the "**None**" status with settings you had before entering the Registration Mode

## 5. Production Test

Production test is implemented in firmware. It allows easily testing of each manufactured device at the final step of production.



### 5.1 Starting Production Test 1

While starting-up the 5916PIA-DK board, press highest F# and C for 2 seconds. Display will go in Test Mode 1.

### 5.2 Leds and switches test

Switches with one LED (excepted Function switches F1 to F3): Press each switch to test it and its LEDs. LED is on when switch is pressed and off when switch is released.

All LEDs can be lighted at the same time by pressing the “**Update**” function button

### 5.3 Display test

Pressing the “**Blk/Wht**” function button will alternatively show:\*

- Black display: All pixels are on
- White display: All pixels are off
- “**Test Mode 1**” display

### 5.4 Pedal test

#### 5.4.1 Soft pedal (left)

Press pedal. If pedal is simple switch, “**SoftP**” display shows 0 when pedal is released and 127 when pedal is depressed. If pedal is analog system, more values will be displayed in range 0 - 127.

#### 5.4.2 Sostenuto pedal (middle)

Press Pedal. Display shows 0 when pedal is released and 127 when pedal is depressed.

#### 5.4.3 Damper pedal (right)

Press pedal. If pedal is simple switch, display shows 1 when pedal is released and 127 when pedal is depressed. If pedal is analog system, more values will be displayed in range 0 – 127

## 5.5 MIDI test

The purpose of this test is to validate MIDI IN path, MIDI IN socket and MIDI OUT path, MIDI OUT socket.

- Connect MIDI IN to MIDI OUT with a MIDI cable.
- Press “**Update**” function switch
- Display shows “**MIDI: OK**” if test passes or “**MIDI: BAD**” if test fails.

## 5.6 Headphones detect test

The purpose of this test is to validate headphones detection. Headphones detect input is available on pin 2 of J25 in case of 5916PIA-DK board and on pin 2 of J21 in case of 5818-DK board.

- Connect headphones detect input to ground by connecting pin 1 and pin 2 of J25/J21.
- Press “**Update**” function switch
- Display shows “**Spk/HP: HP**”
- If Headphones detect input is floating display shows “**Spk/HP: Spk**”

## 5.7 Starting Production Test 2

To enter Test Mode 2 press “**Next**” function button from “**Test Mode 1**” Menu.



- “**Start**”, “**SamTest**” and “**ShutDwn**” Leds are blinking

## 5.8 Components test

Components test will automatically and consecutively test serial DataFlash device, 64Mbit SDRAM device, and NAND Flash content.

Press “**Start**” function button to start the following test sequence:

- “**Start**” Led is on.
- Serial DataFlash test is run. If passed “**Serial Flash OK**” is displayed”
- NAND Flash test is run. If passed “**NAND Flash OK**” is displayed”
- RAM test is run. If passed “**RAM OK**” is displayed”

Note:

- Time for NAND flash test can be long, depending on the sound bank size.
- NAND flash test is usable only when NAND flash devices have been programmed on external programmer with files generated by MakeRom Dream tool.
- Firmware integrity is automatically checked by bootloader before running it.

## 5.9 Shut down test

Pressing the “**ShutDwn**” function button allows to test the AutoPower off function.

5916PIA-DK: Pin 5 of J5(P5.11) is driven High

5808PIA-DK: Pin 5 of J5(P7.13) is driven High

## 5.10 SAM test

SAM test will test internal chip elements.

To start component test press “**SamTest**” function button.

Steps are:

- 1- test all P24 2kx24 RAM
- 2- test router memory
- 3- test all P24 working and start 1.5kHz sine wave
- 4- test all P24 2kx24 ROM
- 5- change sine wave freq to 1.125kHz
- 6- test internal MAIN RAM
- 7- test P16 IRAM
- 8- change sine wave freq to 750Hz

In error case:

- 1 beep at 1.875kHz -> DSP ROM test failed
- 2 beep at 1.875kHz -> internal MAIN RAM test failed
- 3 beep at 1.875kHz -> P16 IRAM test failed

If test is success then a full scale, 750Hz, sine wave signal will be generated on main audio L and R output. It could be useful for checking analog output stage of the product

Warning: Firmware stays in an endless loop at the end of the test. To recover normal playing mode, product should be restarted.



## 6. Standalone Operation

### 6.1 Programming the Failsafe-Bootloader and Firmware

For standalone operation you will need to compile and program both the Bootloader and the Firmware.

Use ProgSam V4.6 (and up) for programming.

The Bootloader (5808Failsafe.bin or 5916Failsafe.bin or 5916Failsafe2) must be programmed to NAND Flash. The Firmware (5808PIA-Ref.bin or 5916PIA-Ref.bin or 5916PIA2-Ref.bin) must be programmed into the serial Flash.

### 6.2 Programming Sound Bank, Demo set, Rhythm Loop set, Factory Registration set or Firmware

When power-up, the Failsafe-Bootloader will automatically load and run the Firmware, if possible (if correctly programmed to the serial DataFlash). If you want to skip this (e.g. if you want to program the sound bank(s), the demo file, ..., or the firmware), you must press the lowest A and C#. The Bootloader will then start in Failsafe Setup mode.

Another alternative to start in start in Failsafe Setup mode is to place a jumper on:

- pin 5 and 6 of J7 in case of 5916PIA2-DK board.
- pin 9 and 10 of J19 in case of 5916PIA-DK board.
- pin 8 and 9 of J19 in case of 5808PIA-DK board.

In this mode it will show "Init USB...", "Init NFM..." and then "Please insert USB...". At this point please insert a USB-Stick with the sound bank, demo, firmware binaries loaded (e.g. the Dream "Piano+GM-Demo-SBK.BIN") to the "USB HOST" port of 5808-DK / 5916PIA-DK / 5916PIA2-DK board. It will open the file selection, please select the Sound Bank, Demo, Rhythm, Registration or Firmware binary file with UP and DOWN buttons, then use the RIGHT button to select the file to use for programming to the NAND Flash or DataFlash. Now the programming will start. The programming speed depends on the USB-Stick used, it can be up to 3.4MB/sec.

Programing destination is automatically affected by the bootloader and is as below.

File type	Destination Device	Destination address
<b>Rhythm Loops</b>	NAND Flash	0x0002:0x0000
<b>Demo</b>	NAND Flash	0x0006:0x0000
<b>GM Sound Bank: GM5x128</b>	NAND Flash	0x0008:0x0000
<b>Piano Sound Bank: Piano-5000-Demo</b>	NAND Flash	0x0080:0x0000
<b>Firmware</b>	DataFlash	0x0000:0x0000
<b>Factory Registration Set</b>	DataFlash	0x0002:0x0000

## 7. Feature Table

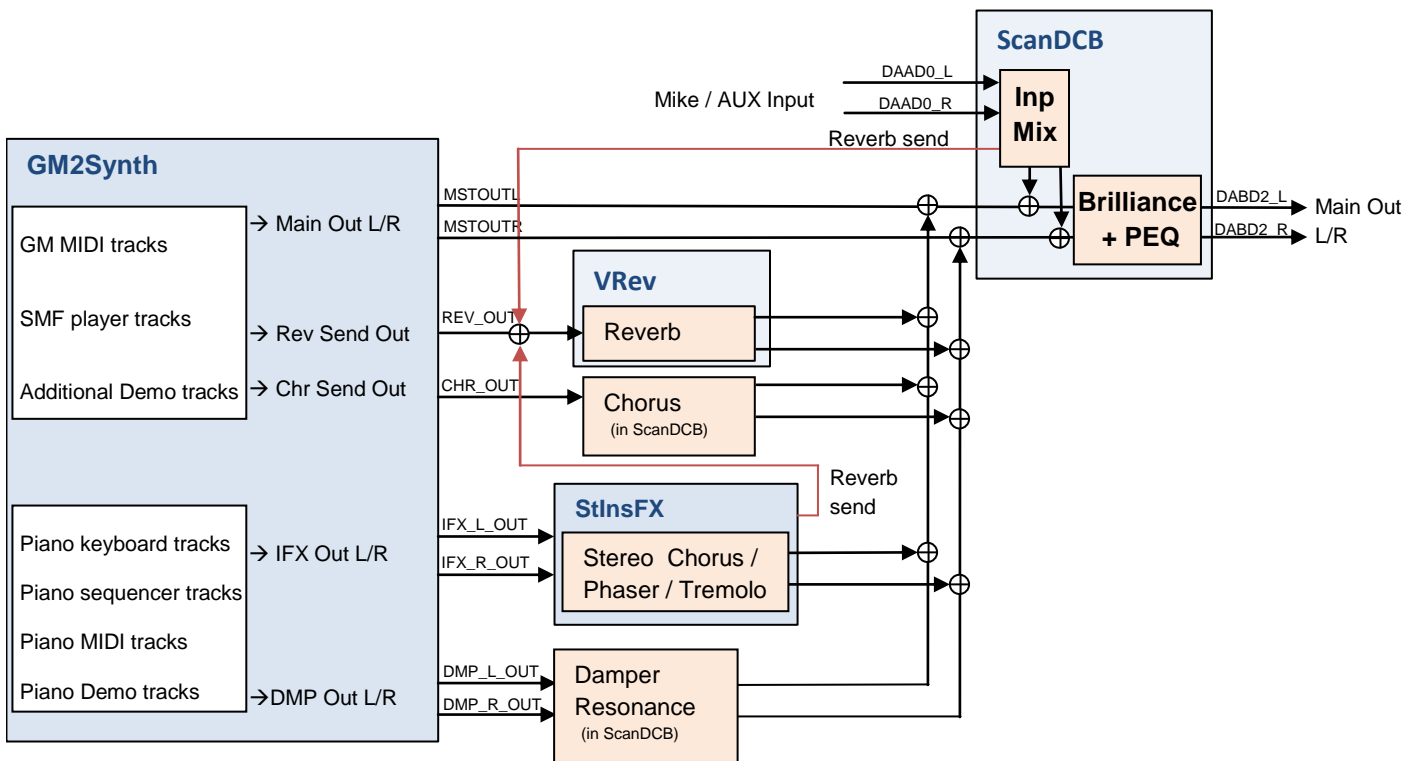
FEATURES	DETAILS
Sounds	21 sounds selectable from panel 128 GM sounds + 140 variations selectable from MIDI Manual Drums
Memory for 17 high quality sounds	110 MByte
Memory for GM sound + variations.	14 MByte
Sound Engine	64-parts Multitimbral high range Wavetable Synthesizer
Polyphony	Up to 256 voices
Display	128x64 pix LCD with adjustable backlight and contrast, invert mode
Effect	Reverb: (Type: Room1, Room2, Hall1, Hall2, Stage), (Parameters: Level, Time) Modulation (Type: Chorus, Tremolo, Pan Tremolo, Phaser, Rotary) (Parameters: Dry/Wet, Rate, Speed, Amp. Modeling) Damper resonance, Sympathetic resonance
Metronome	Time signature: 1/4, 2/4, 3/4, 4/4, 5/4, 6/8, 6/8, 12/8 +10 drum rhythms 10-400 bpm with volume control
Recorder	4 songs, 2 tracks per song, 150 000 event per song SMF format 0, storage in DataFlash
Demo	3 demo songs
Lesson Mode	Right / Left balance, AB Loop
Registrations	18 factory registration overwritten by 18 registrations for user. 1 User Default registration loaded at start-up Storage in DataFlash
Touch Curve	Soft, Very Soft, Medium, Hard, Constant (programmable from 0 to 127 by user), Minimum touch adjust
Dual	2-sound layer with volume balance
Split	Programmable Split point, Balance, Left Octave Shift
4-Hands	Programmable Split point, Balance, Left & Right Octave Shift
Transpose	Key Transpose & Song Transpose (-12 to +12 semi-tones)
Tune	427 to 453 Hz
Temperaments	Equal, Pythagorean, Pure Major, Pure Minor, Mean Tone, Werckmeister III, Kimberger III Programmable Root Note
MIDI	Transmit Channel, Local Control, Program Change On/Off, Piano Mode On/Off
USB To Host	USB MIDI (to Host) Real time parameters control with Dream Midi Control PC software for Factory presets design (Reverb, Modulation Effects, Rotary, Param EQ, Brilliance EQ, Temperament, Sound Program Definition, Sound Button Config, Get Screen Capture)
USB To Device	Play Song (SMF format 0 & 1, MP3, Wave), Load Song (SMF Format 0), Load Registrations, Save Song (SMF Format 0), Save Registrations, Delete File, Real time Audio Recording with Overdub. Update from Bootloader: Firmware, Sound Bank, Demo, Rhythms, Factory Registrations,
Pedals	Damper (4 levels), Sostenuto, Soft
Registrations Restore	Recall of factory Registrations
System Restore	Recall of factory parameters settings
Auto Power-Off	Off, 15 mn, 30 mn, 60 mn, 90 mn, 120 mn
Production Test	Test for front panel: Leds, Display, Switches, Pedals Test for board components: SAM5916, DataFlash, Nand Flash, SDRAM MIDI test Play sine wave for audio test

## 8. Synthesizer Tracks mapping table

5916PIA firmware has a built in 64-tracks GM synthesizer. Mapping of the sound tracks is shown in the table below:

Sound Player	Track number (0-63)
Keyboard Single or Upper Sound	0
Keyboard Dual or Lower Sound	1
Sympathetic Notes for keyboard, MIDI In (piano mode), demo, sequencer	2-5
Metronome	15
Rhythm Player	15
Demo Piano track 1	16
Demo Piano track 2	17
Additional Demo tracks	18-31
Sequencer Piano track 1, Single Sound	16
Sequencer Piano track 1, Dual or Lower Sound	17
Sequencer Piano track 2, Single Sound	18
Sequencer Piano track 3, Dual or Lower Sound	19
MIDI File Player	16-31
MIDI IN in GM Mode	16-31
USB MIDI In GM Mode	16-31
Not Used	31-63

## 9. 5916PIA DSP Modules and Audio Routings



## **Dream Contact**

info@dream.fr

## **Website**

<http://www.dream.fr>

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