DSPfactory

Introduction

The **DSPfactory** is a powerful effects processor equipped with 24-bit FV-1 DSP processor (by Spinsemi) which allows you to create amazing quality audio effects.

What is more, the built-in memory gives you the possibility to change and edit all the available effects and can store up to 32 user settings (called Patches).

The main features:

- 8 built-in audio effects stored in the Internal bank [I00…I07]

- 8 built-in, fully editable audio effects stored in the External bank [E00…E07]

- 32 fully editable User Patches [U00…U31]

- 3 knobs that allow you to change the real time effect parameters

- preprogrammed, unique echoTapper bank (by **Piet Verbruggen**) providing following analogue tape echo units simulation: **Meazzi** Echomatic-I model 'J' Classic, **Meazzi** Echomatic-I model 'F' Classic, **Meazzi** Echomatic-I model 'F' Special, **Meazzi** Echomatic-II Bank, **Vox LongTom** Classic, Meazzi Echomatic-II Classic, **Roland** model 301 Mode 5 oraz Reverb and/or Tremolo

- Built-in MIDI interface (IN/OUT) for remote, real-time control of the effects parameters

- Built-in USB interface that allow you to update the External bank

- Custom DSPfactory Programmer application designed to edit the External bank settings

- Mono input/output jacks on the front panel for connecting guitar and the amplifier

- Stereo input/output jacks on the rear panel for connecting stereo signals

- Input gain control

- Built-in, high quality headphone amplifier with volume control

- Support for a BYPASS footswitch

- Automatic bypass on power off

- Clear and intuitive user interface with high-quality OLED display

- New effects can be designed by means of SpinAsmIDE application (http://spinsemi.com/products.html) and uploaded to the DSPfactory

Quick Start

Make connections

- Make sure that the DSPfactory and your amplifier are turned off. Make sure that the INPUT GAIN control knob is set to the left (minimum value).

- Connect the OUTPUT jack (located on the front panel) to the input of your amplifier.

- Connect your guitar to the INPUT jack on the front panel.

- Turn on the DSPfactory and your amplifier.

- Increase the INPUT GAIN until you get sound from the amplifier.

👉 What are banks and patches?

- PATCH – is a group of the settings for a certain effect type.

- BANK – is a group of Patches. The DSPfactory has three banks: Internal (8 Patches), External (8 Patches) and User (32 Patches). The effects in the Internal bank cannot be modified but can stand base for User Patches. The effects in the External bank can be modified, or replaced (updated) by new effects and can stand base for User Patches. The User bank contains customized user settings for effects either from Internal or External banks.

Select bank and effect

1. Press the **BANK** button to select a bank of effects (Internal, External or User).

2. Press the **PREV/NEXT** buttons to scroll through different effects (Patches).

3. Set **POT1, POT2, POT3** to change effect settings. The parameters assigned to each knob are shown on the display.

👉 **Note:** by default, the last used effect is loaded when the DSPfactory is turned on.

Patch list

Bank	Patch #	Patch name
Internal	0	Chorus-reverb
	1	Flange-reverb
	2	Tremolo-reverb
	3	Pitch-shift
	4	Pitch-echo
	5	Bypass (for testing)
	6	Reverb #1
	7	Reverb #2
External	Can be reprogrammed. By default, Echo Tapper Patches are loaded.	See below for a list of Echo Tapper Patches
User	The user can save here his own Patches (including knobs settings and a Patch name). By default, this bank is pre-programmed with 22 Patches used for The Shadows songs.	

Echo Tapper pre-programmed effects

The DSPfactory External bank is pre-programmed with unique effects created by Piet Verbruggen (NL). The effects provide analogue tape echo units simulation (by Meazzi, Vox and Roland) used in the sixties by Hank Marvin the lead guitarist from The Shadows (among the others).

The following echo units are simulated (knob functions are shown as well):

| Effect	POT1	POT2	POT3
Meazzi Echomatic-I model 'J'	Dry/Wet	Heads	Feedback
Classic Meazzi Echomatic-I model 'F'	Dry/Wet	Heads	Feedback
Classic Meazzi Echomatic-I model 'F' Special	Dry/Wet	Heads	Feedback
Meazzi Echomatic-II Bank	Dry/Wet	Heads	Feedback
Vox LongTom Classic	Dry/Wet	Heads	Feedback
Meazzi Echomatic-II Classic	Dry/Wet3	Dry/Wet4	Feedback
Roland Model 301 Mode 5	Dry/Wet	VariS	Feedback
Custom reverb & tremolo	Reverb	TremFreq	TremDepth

For more information visit:

- http://www.echotapper.nl – EchoTapper Web site

- http://www.meazzi.org.uk/ - Meazzi Web site

Controls and Connections

Front Panel
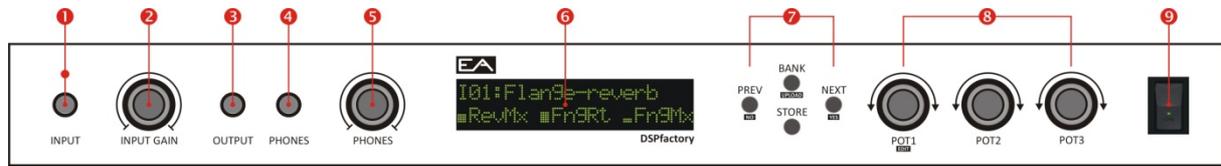
❶ INPUT – ¼'' instrument input (MONO). Connect an electric guitar here.

❶ CLIP LED – the LED will light up if the INPUT GAIN knob is set too high.

❷ INPUT GAIN – controls the input signal gain.

❸ OUTPUT – output signal jack (MONO).

❹ PHONES – headphones output jack (STEREO).

❺ PHONES VOLUME – controls the headphone output signal.

❻ DISPLAY – displays the information required to operate the DSPfactory (bank, Patch and parameters).

❼ PREV/NO, NEXT/YES, BANK/UPLOAD, STORE keys – presets edit keys.

❽ POT1, POT2, POT3 – effect knobs. The POT1 knob is used for editing (Patch number and Patch name) as well.

❾ POWER – turns the DSPfactory on and off.

Edit keys

| Key name	Function
PREV/NO	This key is used for selecting previous Patch, or answer "*NO*" when prompted (for example to upload new Patches into the External bank).
NEXT/YES	This key is used for selecting next Patch or answer "*YES*" when prompted.
BANK/UPLOAD	This key is used for selecting bank. When the key is held down for at least 1 second, user is asked whether he wants to upload a new contents of the External bank.
STORE	This key is used for storing user settings (for any Patch from Internal, External or User bank) when is held down for at least 1 second. In this mode, the POT1 knob and PREV/NEXT keys are active. The POT1 knob can be used for selecting the Patch number (U00…U31) and to scroll through sequential characters (to assign a custom name to the Patch). When the key is pressed again for at least 1 second, new user Patch is saved.

Rear panel
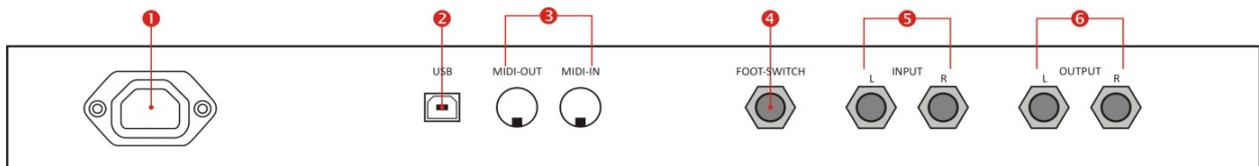
❶ POWER JACK - attach the included Power cord here.

❷ USB – the USB connector allows you to connect the device to the computer and to communicate with the DSPFactory Programmer software. This allows you to program the External bank.

❸ MIDI-OUT/MIDI-IN – these connectors allow you to connect the DSPfactory to other MIDI device in order to transmit/receiving MIDI messages.

❹ FOOTSWITCH – this ¼'' Jack connects the optional 1 button BYPASS footswitch (momentary).

❺ INPUT L and R – left and right input jack. When used, the INPUT jack on the front panel is bypassed.

❻ OUTPUT L and R – these outputs can be plugged to stereo amplifier, mixer or recording device.

☞ **Note:** when using a mono effect, only LEFT input and LEFT output should be used.

The Main Display
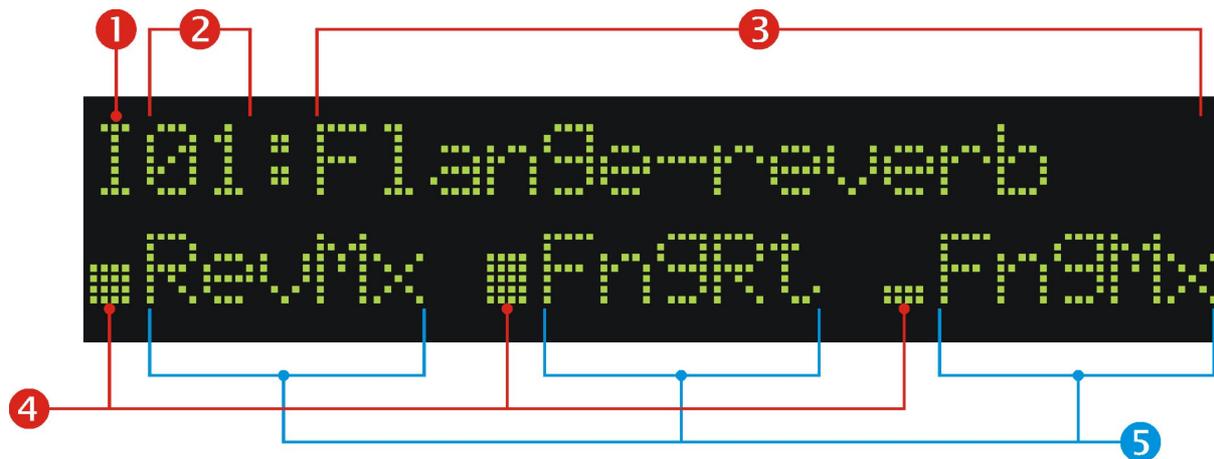
❶ - Bank: I →Internal, E →External, U →User.

❷ - Selected Patch number

❸ - Selected effect name

❹ - Graphical representation of **POT1, POT2** and **POT3** knobs settings

❺ - Symbolic names of the parameters assigned to **POT1, POT2** and **POT3**. When the value assigned to selected parameter is changed, its value is displayed for 2 seconds as shown below:

Using the DSPfactory

The DSPfactory features a clear and user-friendly interface. It consists of four keys: **PREV/NO**, **NEXT/YES**, **BANK/UPLOAD**, **STORE** and three control knobs: **POT1**, **POT2** and **POT3**. The knobs allow you to control real-time parameters shown on the display.

👉 **Note**: the **PREV**, **NEXT** and **BANK** keys have double function used for editing.

Select a bank/effect

1. Press the **BANK** key to select a bank. It will scroll through: **I→ E→ U** banks (Internal, External and User). **EMPTY PATCH** is displayed when selected bank is empty. In such a case the signal from the input will be passed to the output without any change.

2. Press the **PREV** key to select previous effect.

3. Press the **NEXT** key to select next effect.

Create User Patch

1. Press the **STORE** key to start editing and saving new user Patch.

2. Press the **NO** key to quit user Patch editing.

3. Press the **YES** key to save user Patch.

User bank edit

The DSPfactory allows you to change parameters of each effect. The group of modified parameter's settings can further be saved as a Patch in the User bank. A Patch consists of all parameter's settings, the Patch name and a bank location [U00…U31].

👉 **Note:** Knob functions names modification is not possible.

1. Press and hold the **STORE** button to start the **USER** bank editing. The initial screen looks as follows:

```
U01:Flange-reverb
■RevMx ■FngRt ▪FngMx
```

👉 Note: the cursor marking the item being edited: the bank number, or the Patch name.

2. Press the **PREV** key to move the cursor location to the left.

3. Press the **NEXT** key to move cursor location to the right.

4. Turn the **POT1** control knob to change the value being edited (highlighted by the cursor).

5. Press and hold the **STORE** key to save User Patch editing.

6. The end of editing is prompted with the question whether the new settings should be saved. To confirm editing press the *YES* button (or the *NO* button to quit the operation).

```
Save new USER Patch?
PREV: No, NEXT:Yes
```

External bank upload

The Patches in the External bank can be updated by the user. This can be done by means of a dedicated **DSPfactory Programmer** application. The application allows you to create a custom set of Patches, assigning custom names to Patches, custom names to parameters for a given Patch and default values for the parameters.

The uploading process is started by pressing the **UPLOAD** key (for at least 1 second). The display will look as follows:

```
Upload EXT bank?
PREV: No, NEXT:Yes
```

Pressing the *YES* key makes that the DSPfactory start waiting for data transfer from the DSPfactory programmer application.

When the upload is started, the display shows the progress of data transfer:

```
Waiting for new data
▉▉▉▉▉
```

☞ **Note**: uploading new External bank will clear all the User Bank Patches based on the External bank.

The DSPfactory Programmer application

The DSPfactory Programmer application is designed to create user Patch definitions and send it to the DSPfactory.

👉 **Note**: the DSPfactory requires a USB driver installation in order to communicate with the DSPfactory Programmer application. The driver will be installed during the first connection.

The **eTap2HW compatibility** checkbox allows you to change the knobs values to scroll through A, B, C, E, F values (symbolic names assigned to sets of heads in Meazzi tape echo) instead of numeric values (0 to 31).

The Upload button starts the data transfer to the DSPfactory (assuming it is already set to "**Waiting for new data**" state). After the upload is completed, the DSPfactory is set to the first Patch from the External bank.

Advanced topics

Using MIDI

The DSPfactory can send and receive MIDI messages such as **Program Change** (Patch changing) and **Control Change** (changing values assigned to the **POT1,POT2** and **POT3** knobs). Every time you change the Patch number or knobs settings appropriate MIDI message is sent via the interface. The messages can be also received. Received messages cause real-time changes. When a valid MIDI message is received, the character ":" preceding the Patch name changes to" →" as shown below:

The following messages are recognised:

Message	Controller	Value	Details
Program Change	N/A	0…47	Values: 0…7 → Internal bank [0…7] Values: 8…15 → External bank [0…7] Values: 16…47 → User bank [0…31]
Control Change	12…14	0…31	Controller: 12 → POT1 value Controller: 13 → POT2 value Controller: 14 → POT3 value

Export User Bank settings using system exclusive messages (SysEx)

The User Bank Patches settings of the DSPfactory can be transferred as a special MIDI message (called MIDI System Exclusive) to an external device (or simple MIDI sequencer application). This allow you to export/import all the User Bank settings.

1. Press and hold the **NEXT** button to start the export

```
Transmit USER data?
PREV: No. NEXT:Yes
```

2. Press the **NEXT** button to confirm, or the **PREV** button to cancel the operation. The DSPfactory starts sending User Bank settings.

```
Transmitting...
```

☞ **Note:** before starting the data export it is required to start software that can receive system exclusive messages. Alternatively a MIDI sequencer can be used.

Import User Bank settings using system exclusive messages

The DSPfactory can also import system exclusive messages. A valid system exclusive message (manufacturer ID 0x7F and device ID 0x01) is handled automatically and the following information is then shown to the user:

```
Receiving SysEx data
Please, wait...
```

After SysEx transmission is completely received, data is verified and the User Bank contents is updated.

```
SysEx data transfer
completed!
```

☞ **Note:** during SysEx messages transmission all controls and keys on the front panel are disabled. It is required that the transmission cannot be interrupted by any MIDI messages.

☞ **Note:** MIDI SysEx feature allows you to copy settings between two DSPfactory units just by a simple MIDI cable.