

# Impulse<sup>V. 3</sup>

Virtual analogue synthesizer



## Table of contents

2	Table of contents
3	License agreement
4	Introduction
5	Installation
6	The controls
7	The oscillators
8	The amplifier
9	The filter
10	The LFOs
11	Misc.
12	The Stereo FX & Overdrive
13	MIDI implementation
14	The Preset-Manager
15	The Preset-Manager: Random presets

This manual was written by Bo Johansen.

Original release date: Dec. 7-2000

Current revision date: Aug. 27-2004

All information in this manual is subject to change without notice.

“Impulse” is copyrighted software. Please refer to the license agreement.

All product and company names are <sup>™</sup> or <sup>®</sup> trademarks of their respective owners.  
VST is a trademark of Steinberg Soft- und Hardware GmbH.

© Bojo Software 2000-2002. All rights reserved.

# Licence agreement

## LICENSE AGREEMENT - IMPULSE

=====

### Disclaimer

-----

This software (Impulse) is provided "as is" without warranty of any kind. The author makes no guarantee of correctness, accuracy, reliability, safety or performance. You alone are responsible for determining if this software is safe for use in your environment. Neither the author nor anyone else who has been involved in the creation or delivery of this product shall be liable for any direct, indirect, consequential, or incidental damages arising from the use or inability to use such product even if the author has been advised of the possibility of such damages.

### License agreement

-----

This software (Impulse) is copyright (c) Bojo Software, DK. The software is distributed as freeware. It may not be redistributed, sold in any form or used to deliver a chargeable product or service without the author's prior written permission. Where redistribution is authorised in writing by the author, the software must be redistributed in its original zip archive format, and must not be modified in any way. By downloading and installing the plug-in, you are agreeing to the above disclaimer and license agreement.

This plug-in was written using the Steinberg VST Software Development Kit. All Steinberg copyrights acknowledged.

# Introduction

*Impulse* is a virtual analogue synthesizer for Cubase VST® and compatible systems.

It's one of the best sounding and most versatile software synths on the market.

## Key features

- Simple, easy to use interface.
- 16 voice polyphony
- 1, 2 or 4 oscillators in each voice
- True stereo mode, for a wide sound
- 5 different oscillator waveforms with pulse-width/distortion and sync.
- Oscillators effectively anti-aliased
- 4 different resonant filters
- Two LFOs with 8 different waveforms (incl. Random)
- Separate envelopes for Osc1 & Osc2
- Portamento & auto-bend
- Stereo FX
- Overdrive
- LFO & FX can be synced to tempo
- Several MIDI-controllers implemented
- Preset manager

# Installation

## Host software

To use *Impulse* you need a VST 2.0 compatible host-software.

Since *Impulse* is a plugin, it needs to be installed in such a manner that the host-application can find and use it. Normally this is done by installing *Impulse* into a specific folder.

## Installation

To start installation run the installation file called something like "impulse300.exe" and follow the instructions on the screen. If you have a newer version of Cubase the installation program will automatically suggest the correct installation folder.

If you're using an older version of Cubase or if you are using another host-software (f.inst. Logic Audio), you must select the correct installation folder manually. Typically the folder is called "vstplugins" and located in the folder where the host software is installed.

## Usage

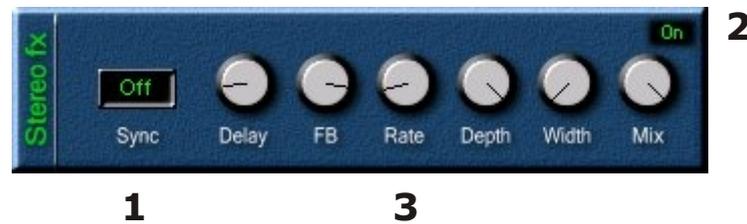
After installation you should be able to select *Impulse* as an instrument in your host-software. Please refer to the host-software's documentation to get information about using VST instruments.

## Uninstallation

You can uninstall *Impulse* like any other windows program. Select "Uninstall *Impulse*" from the start-menu or uninstall *Impulse* from the control-panel.

## The controls

In *Impulse* you will come across three different types of controls.



### The selector (1)

The selector is an easy way to select a value among several possible.

To quickly set a new value, *left-click* the selector (a menu pops up) and while holding down the *left-mousebutton*, drag the cursor to the value you want to select. When you release the button the value will be selected.

To increment the selector to the next value *right-click* it. When it reaches the last value it will start over from the first value.

### The switch (2)

The switch looks a lot like the selector, but holds only two different values. Usually it's used for turning things on and off. You change the state of the switch simply by *left-clicking* it.

### The knob (3)

The most common control is the knob. You control it by simply *left-clicking* at the position where you want it to point to. While still holding down the *left mouse-button* you can drag the mouse around the screen. You will notice the knob turns to point in the mouse cursors position.

Alternatively you can hold down `<Ctrl>` while dragging the mouse up & down to move the knob relatively. Great for those small adjustments.

When you turn a knob it's actual value is displayed, as seen here:



To display the current value of a knob, simply *right-click* it .

## The oscillators



Oscillators generate the raw soundwaves.

**Shape:** Selects the oscillators waveform for osc 1 or 2.

*Sine:* The most simple waveform. Does not contain any harmonics and is therefore quite uninteresting to filter. Best used for flute like sounds or very deep sub basses.

*Triangle:* Has very few harmonics and sounds only a bit more exciting than the sine wave when filtered. Can be used for flutes and organ sounds.

*Square:* Has a lot of harmonics and is therefore very interesting to filter. Has a metallic quality and is suitable for clarinet and bell-like sounds.

*Sawtooth:* Like the square wave the sawtooth contains lots of harmonics and responds very well to filters. Best used for synth-sounds, basses, strings and lots more.

*Noise:* Random noise. Usable for effect-sounds etc.

**Octave:** Shifts the octave up to +/- 2 octaves.

**Pw/Dist:** When shape is Square this knob changes the pulsewidth. If the selected shape is Sine/Triangle or Sawtooth, the knob sets the amount of distortion.

**Transpose:** Transposes Osc2 0-11 semitones.

**Detune:** Detunes Osc2 0-1 semitone.

**Dbl. Tune:** Detunes Osc3 + 4 0-1 semitone, when mode is "Double".

**Mode:** This knob selects one of the four different oscillator mixing modes.

*Single:* Uses only oscillator 1. This is the mode that has the lowest processing power usage.

*Mix:* Both oscillators are playing and mixed together. This mode uses almost twice the processing power than the "Single" mode.

*Ring:* Oscillator 1 is multiplied with oscillator 2 to obtain a ringmodulator effect. Good for gong sounds and effects. When the "Detune" knob is turned, various sweeping sounds are created.

*Double:* Oscillator 1 & 2 are being doubled and detuned for a very fat and big sound. This setting uses the most processing power.

**Sync:** When sync is on, osc. 2 is restarted every time that osc.1 has completed a cycle.

**Output:** Toggles between mono and stereo output. In stereo mode oscillators are processed individually and panned left/right according to the "Width" setting.

**Width:** When stereo output is selected this knob sets far apart the oscillators are panned. Leftmost position is equal to both oscillators panned center(mono). In the rightmost position oscillators are totally separated.

**Mix:** Sets the relative volume between Osc1 and Osc2. Center position is 50/50.

## The amplifier



The amplifier shapes the volume over time, by using the envelopes.

### Main

This sets the overall volume of the sound. Use it to give all the sounds in a bank a similar volume.

### On/Off (Env2 only)

This enables/disables Env2, which is used for Oscillator 2. When it's disabled, Env1 is used for both Osc1 and Osc2.

### Delay (Env2 only)

This sets the time(0-10 sec.) before Env2 starts.

### Attack

This sets the time(0-10 sec.) it takes for the sound to rise from 0 to maximum volume.

### Decay

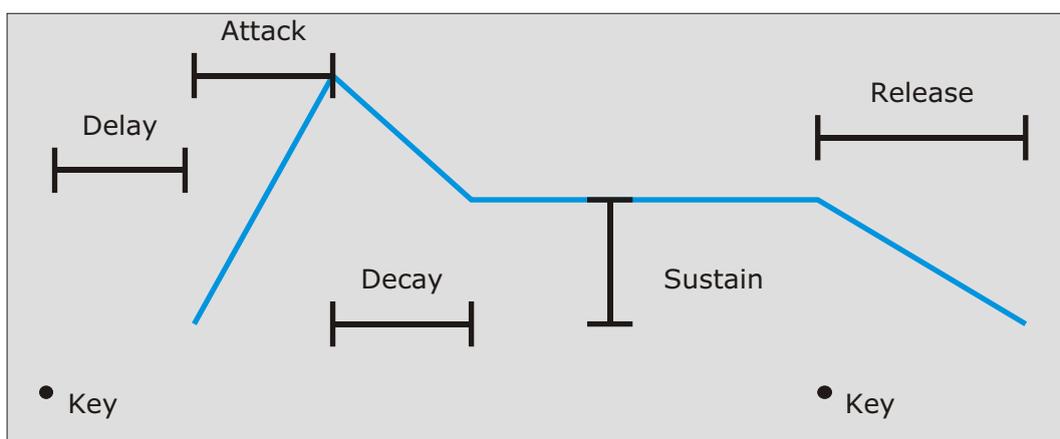
Sets the time (0-10 sec.) it takes the volume to fall from maximum to the sustain level .

### Sustain

This knob sets the sustain level.

### Release

Sets the time it takes the volume to fall to 0, after the key is released.



*Example of an envelope*

## The filter



The filter changes the harmonic content in the sound.

### Type:

**Off:** The filter is deactivated. If your sound doesn't use the filter make sure you set it to "off" to reduce the processing power usage.

**LP6:** Selects a 6dB low-pass filter. This filter uses very little processing power.

**LP12:** Selects a 12dB low-pass filter. This filter is more powerful than the LP6 filter, but it also consume twice as much processing power. It can produce a powerful resonance effect. Good for techno sounds.

**LP24:** A different design than the LP6 & LP12. Sounds warmer and less digital. Very good for classic analog sounds.

**HP:** Selects the high-pass filter. Best suited for "thin" sounds.

**Attack, Decay, Sustain & Release:** These controls work in the same way as the controls in the volume envelope. The filter envelope modulates the filter cut-off frequency.

**Env.:** Sets the amount of modulation that the envelope applies to the filter cut-off frequency.

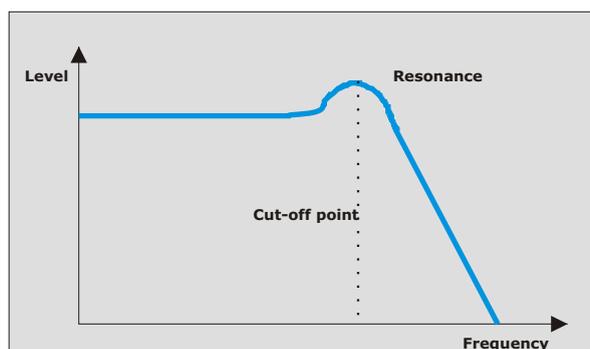
**Kbd:** When playing low keys on the keyboard the filter cut-off frequency is lowered, and when playing high keys it's raised.

**Cutoff:** This knob controls the filter frequency cut-off point.

*When a low-pass filter is selected:* As you lower the value, higher frequencies are reduced. When the knob is positioned at its lowest setting no frequencies will pass though the filter. At the highest setting all frequencies will pass though the filter.

*When the high-pass filter is selected:* As you raise the value, lower frequencies are reduced. When the knob is positioned at its lowest setting all frequencies will pass through the filter. At the highest setting only very high frequencies will pass through the filter.

**Resonance:** This knob controls the amount of resonance. Resonance amplifies the frequencies in the area around the cut-off point. When the value is raised the resonance peak gets higher.



Example of a low-pass filter

## The LFOs



The LFOs (Low Frequency Oscillators) repeatedly modulates pitch, volume & filter cutoff with the selected waveforms.

**Mode:** Determines how LFO1 & LFO2 are used.

*LFO1:* Only LFO1 is used. All oscillators are modulated by LFO1.

*Both:* Both LFO1 and LFO2 are used. All oscillators are modulated by both LFO1 and LFO2.

*Split:* Both LFO1 and LFO2 are used. Osc1 is modulated by LFO1 and Osc2 is modulated by LFO2. If the output mode is set to Stereo, filters and volume are split left(LFO1) and right(LFO2).

**Invert:** Useful to fatten up the modulations and practical when using LFO-Sync.

*None:* Both LFOs have the same phase.

*LFO1:* LFO1's phase is inverted.

*LFO2:* LFO2's phase is inverted.

*Both:* LFO1's and LFO2's phases are inverted.

**Shape:** Selects the type of waveform the LFO is using. Sine, Triangle, Square, Saw up, Saw down, Exp up, Exp down or random.

**Sync:** Synchronizes the LFO frequency to the tempo set in the host program. Values range from 1/8 beat to 96 beats. *Please note that some hosts doesn't support tempo-sync.*

**Freq:** Sets the speed of the LFO. 0.01 - 30 Hz.

**Pitch:** Sets the amount that the LFO modulates the pitch of the oscillators. In this way vibrato effects can be obtained.

**Volume:** Sets the amount that the LFO modulates the volume of the sound. Use it to produce f.inst. tremolo effects.

**Filter:** Sets the amount that the LFO modulates the cutoff frequency of the filter. Can produce f.inst. wah-wah effects.

## Misc.



Misc. contains different parameters which affect the way you play.

**Portamento:** Selects between the following:

*Off.:* Pitch changes instantly when playing notes.

*Porta.:* Pitch glides from the last played note to the current note.

*Bend+:* Pitch auto-bends from a higher note down to the played note.

*Bend-:* Pitch auto-bends from a lower note up to the played note.

**Pitch-bend:** Sets the pitch benders range from 0 to 12 semitones. This value is also used to determine the range of the auto-bend. (Bend+ & Bend-)

**P-time:** Sets the speed of the portamento & autobend effects.

**Voice limit:** Sets the maximum number of voices.

*When 2-16 voices are selected:* In this mode voices are played polyphonically. When the synth runs out of available voices it "steals" a playing voice. Impulse's note-stealing algorithms ensure that the note-stealing will be as transparent as possible.

*When "mono" is selected:* In this mode only one voice can be heard at a time. If a key is pressed before the previous key is released, the envelopes will not re-trigger! This feature can be used very creatively in solo-playing.

## The Stereo FX



The Stereo FX is basically a stereo modulation delay capable of making chorus, flanger, phasing, delay etc.

**On/Off switch:** Switches the effect section on/off. The "off" position saves processing power.

**Sync:** Synchronizes the FX-LFO to the tempo set in the host-software.

**Delay:** Sets the delay time of the FX. 0.01 - 50 ms.

**FB:** Sets a percentage of feedback. Positive or negative.

**Rate:** Sets the frequency of the FX-LFO. 0.01 - 30 Hz.

**Depth:** Sets the amount that the FX-LFO modulates Delay time.

**Width:** Changes the phase of modulation between left & right channels. Leftmost position results in mono-output, rightmost position results in the widest possible output.

**Mix :**When set at the "dry" position only the direct sound is output. At the "wet" position only FX sound is heard.

### How to make different effects

	<b>Delay</b>	<b>FB</b>	<b>Rate</b>	<b>Depth</b>	<b>Mix</b>
<b>Flanger</b>	low-medium	high	slow	max	wet only
<b>Chorus</b>	medium	min	slow-medium	medium	50/50
<b>Delay</b>	high	medium	-	min	50/50
<b>Phasing</b>	very low	very high	very slow	max	wet only

## The overdrive



The overdrive distorts the output. Great for bass, solo-sounds and effects.

**On/Off switch:** Switches the overdrive on/off.

**Drive:** Sets the amount of distortion.

**Output:** The overdrive effect makes the sound louder. Use the output knob to compensate for the extra volume added by the overdrive.

## MIDI implementation

Impulse has support for the following MIDI controllers.

Controller	1	Modulation
-	7	Volume
-	10	Pan
-	11	Expression (Good for gate effects)
-	64	Hold pedal
-	71	Resonance (from 0 to the knobs value)
-	74	Cut-off (from 0 to the knobs value)
-	120	All sounds off
-	121	Reset controllers
-	123	All notes off

Program change is also supported. This gives you the possibility to use the same channel to play different sounds. Please note that sound is cut off when a program change is received, so its best to send program change when the channel is silent.

### **Please note!**

Some host-software (f.inst. Emagic's Logic) remaps some of the controllers. Therefore you may need to use another controller number than the above mentioned.

## The Preset-Manager



This is the preset-managers main window. Presets are arranged in four rows of 16, to make navigating easier. First row contains presets 1-16. Second row contains presets 17-32 and so on.

**Patch selection:** To select a patch, simply *left-click* it. You can also select patches by using the *cursor keys*.

**Rename preset:** To rename a preset, select it and press *Enter/F2* or *double-click*.

Additional functions are available on the toolbar.



**Open Cubase bank file:** Opens a bank file, containing 64 presets, saved in Cubase format (.fxb).

**Open Cubase preset file:** Opens a single preset, saved in Cubase format(.fxp).

**Save Cubase bank file:** Saved a bank file, containing 64 presets, in Cubase format(.fxb).

**Save Cubase preset file:** Saves a single preset, in Cubase format(.fxp).

**Copy preset to clipboard:** Copies the selected preset to the clipboard.  
Keyboard shortcut *Ctrl+C*

**Paste preset from clipboard:** Paste the preset from the clipboard into the selected preset.  
Keyboard shortcut *Ctrl+V*

**Clear preset:** Clears the selected preset.  
Keyboard shortcut *Del*

**Move preset up:** Moves the selected preset up.  
Keyboard shortcut *Ctrl+Up*

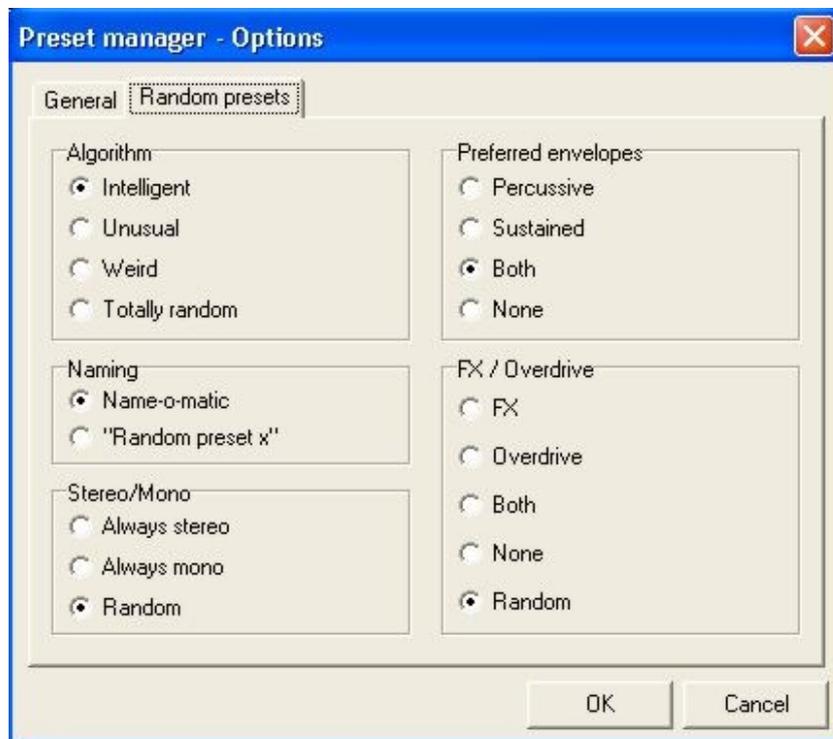
**Move preset down:** Moves the selected preset down.  
Keyboard shortcut *Ctrl+Down*

**Change Preset-manager options:** Here you can setup the level of confirmations and the algorithm used for generation random presets.

**Make a random preset/Make a complete bank of random presets:** Creates random presets. Explained more in depth in the next section.

## The Preset-Manager: Random presets

Random presets in Impulse are created using an intelligent algorithm. In the preset-managers options you can adjust the way random presets are created, from useful presets to totally randomized sound.



**Algorithm:** Selects the level of intelligence. In the more intelligent modes, Impulse will try to give the parameters useful values. If you choose *Totally random*, you will probably get a lot of presets that are not very useful or doesn't make any sound at all, but you may be lucky and get something really special.

**Naming:** *Name-O-Matic* will give each preset a totally random two-word name. Maybe it will inspire your creativity. :-)  
You also select to have the preset named: "Random preset 1", "Random preset 2".....

**Stereo/Mono:** Select your preference. Stereo/Mono/Random.

**Preferred envelopes:** Modifies the envelopes to be either *percussive*, *sustained* or *both*. If you select *none*, the envelopes will be totally random, which may result in very long attacks/releases etc.

**FX/Overdrive:** Enables you to choose if you always want *FX*, *Overdrive* or *both*. If you select *none*, FX & overdrive will never be used. *Random* lets the computer select for you.