# sonicbits io



Version 1.1.0

# Welcome to Pump!

---

**The fastest and easiest way to get your track pumping or to just add some subtle ducking.**

Sidechain compression is one of the most used production techniques in modern electronic music, but is definitely used in other genres as well.

Pump aims to simulate this effect with minimal effort. No more splitting audio signals and dragging cables all over until you're left with a mess of a rack. Just drag and drop Pump on your instrument and you're done. Or even easier: set it up once as a send FX and add sidechain compression to all your channels just by dialing in the send amount.

Pump can also be used as a rhythmical gate on your pads, strings or leads.

**Highlights:**

- 64 pre-calculated envelope shapes for sidechaining and trance gate FX.
- Various controls to adjust the shapes: **Floor, Tension, Slide & Smooth**.
- Unique **Send Mode**, so one instance can be used by several channels.
- Sync to transport or trigger it by note on, note gate or gate CV in.
- Outputs CV to modulate other devices.

Pump can be divided into 4 sections:

1. **Curve Settings** for selecting and adjusting the envelope curve.
2. **Transport** for setting how and when the envelope should be triggered and how fast it should run.
3. **Output** where you can adjust gain and the mix between the dry and wet signal.
4. **CV** routing.

# Curve Settings

**Shape**
Select current envelope shape.
Pump has 64 predefined envelope shapes:
- 1-32 is intended for simulating sidechain input.
- 33-64 is various rhythmically gate shapes.

**Floor**
This sets the depth of the curve. The deeper the curve the less of the audio signal is let through and the more extreme pumping will be achieved. If floor is turned around to a positive value the envelope curve will be inverted.

**Tension**
This is used to skew the curve to either direction. Unlike Slide, Tension will not change the start and end points of the curve, but speed up or slow down as it runs through depending of the direction of the knob.

**Slide**
Slides the whole shape/curve to either direction.

**Wrap**
To be used with Slide. When this is enabled, the slided curve will wrap around at the edge of the display.

**Smooth**
Sometimes, especially when using the Gate shapes, there can be heard some pops and clicks in the sound if the volume is changed to quickly. This setting decides how fast the volume changes between each step. At its lowest value the volume change will happen almost instantly, this may produce clicks. At it's highest setting the change of volume will be slow and sound very soft.

**Display Wave**
If this is enabled the incoming audio signal is drawn in the display. This adds to the CPU usage so to save some precious CPU cycles you can disable this.

# Transport Settings

---

**Rate**
How fast Pump will run through the envelope curve.

**Trigger**
There are four ways to trigger Pump:

- **Transport**
  This will sync Pump to the current play position. This is perfect if you want the ducking/gate effect to be consistant over the whole track. Typically used for 4/4 ducking.

- **Note Trig**
  This can be used if you want to control exactly when Pump should be triggered:

  1. Create a track for Pump: right click Pump and select «Create Track for Pump». A note lane will automatically be added to the new track.

  2. Add notes in the Note lane. Every time a note is played, Pump will retrig and run through the whole envelope curve once and then stop.

- **Note Gate**
  This is almost the same as Note Trig, but Pump will only run as long as a note is held down. Unlike Note Trig, Pump will stop in the middle of the curve if all notes is released. Pump will repeat the curve until every note is released.

- **Gate In**
  Trigger Pump by gate CV signal from an external device. See **Gate In** section under CV routing.

# Output Settings

**Mix**

Sets how much of the processed audio signal is added to the dry signal. If set to 0 only the dry signal is let through. If set to 100 then only the processed audio is let through.

**Gain**

Increase or decrease the loudness of the audio output signal.

**Send Mode**

This activates the unique send mode which enables Pump to be used as a send effect. Add Pump to one of the FX Send channels and adjust the send amount for each channel you want to duck.

The "magic" behind the Send Mode is phase cancellation. The incoming audio signal is phase inverted and also an inverted version of the curve is applied. This means that the more signal is sent through the more it cancels out the original signal.

Be aware that when the signal sent to FX send gets louder than the original signal, the phase inverted audio signal will replace the original and the ducking will have the opposite effect.

# CV routing



**Gate In**
This is useful if you want to trigger Pump from another device, for instance a Redum or a Kong. Connect the CV out from the kick on Redrum/Kong and Pump will run the envelope every time the kick is triggered.

Gate In has priority over the triggers on the front panel. This means that if anything is connected here Pump will only be triggered by incoming gate signals through this connection.

**Mix**
Connect an external modifier, for instance an LFO, to control the mix between dry and wet signal.

**CV Out**
With the CV out you can use Pump to control other devices and effects.
The CV signal from the envelope curve can be output in 3 different ranges from -1 to 1. When it outputs positive numbers the CV value will add to the control it is connected to and if it is negative the CV will subtract from the control it is connected to.
At zero the control that is controlled by the CV will be unaffected.

- **Pos**
  The CV output is in the range between 0 and 1.

- **Neg**
  The CV output is in the range between -1 and 0. This is the default setting and also how the ducking works. The closer the value gets to -1 the lower the audio will be.

- **Full**
  The CV output is in the range between -1 and 1.

# Midi Map

MIDI CC 22 = Shape
MIDI CC 23 = Floor
MIDI CC 24 = Tension
MIDI CC 25 = Slide Stepped (deprecated)
MIDI CC 26 = Smooth Stepped (deprecated)
MIDI CC 27 = Rate
MIDI CC 28 = Gain
MIDI CC 29 = Mix
MIDI CC 30 = Smooth
MIDI CC 31 = Slide

# Pump Version History

**Pump 1.1.0:**

New features:

- Wrap for slided curves
- Pump is now triggered on audio in when
- Note Lane automatically added when a track is created for Pump
- Pump will now trigger when receiving incoming audio when sequencer is not playing. Makes it easier to audition the effect.

Bug fixes:

- Smooth and Slide parameters are now automated correctly. Old automation type kept for backwards compatibility.
- Mix now works correctly in Send Mode
- No more volume boost when bypassed when the track is not playing and in Send Mode.

# Manual History

12.12.2016:
First version. Written for Pump 1.1.0.

# Final Words

**Have any ideas for Pump, or any other future devices? Please let us know.**

You can find us here:

Website: http://sonicbits.io
Youtube: http://youtube.com/sonicbitsio
Twitter: http://twitter.com/sonicbitsio