NEON DRIVE



The NEON DRIVE is a versatile stereo analogue overdrive unit with dynamic drive engine and store/recall capability.

Features

- 2 audio channels for stereo processing
- sidechain for dynamic drive control
- harmonics mixer
- extensive contour settings
- ♦ store & recall
- midi control and snapshot

INTRODUCTION

The NEON DRIVE is a digitally controlled analogue overdrive unit. It has 2 matched audio channels which are controlled from the same source, making it suited for stereo processing.

The drive control is *dynamic*, which means that the amount of overdrive can be steered by the sidechain.

This creates either expansion or 'ducking' of the overdrive, without having an impact on the overall signal level.

There are several *contour* modes which affect the frequency response of the overdrive. This together with the *harmonics* control, which balances the odd and even harmonics, makes for a wide range of sound possibilities, from subtle colouring to warm saturation to bright distortion.

All settings and positions of the knobs can be stored internally in presets. All parameters respond to midi input control changes. A 'snapshot' of the current settings can be exported via the midi output.

The interface remains very straightforward and intuitive. No layered menu functions and each parameter has a dedicated control knob or switch.

OPERATION

POWER

The NEON DRIVE is operated from mains voltage. The unit can operate on either 230V or 115V. This is hardwired internally. Power consumption is 20 Watts maximum. Mains voltage and fuse rating is labeled on the back of the unit.

When turning on the unit, it will reset the contour mode and the controls are set to manual. The display now shows the current contour mode (which is '--' or flat). Bypass is turned on.

CONNECTIONS



Audio XLR inputs & outputs are fully balanced and operate at the professional +4dBu level. The EXT input is routed to the sidechain.

MIDI I/O is the standard 5 pin DIN connection.

CONTROLS



BYPASS

Pressing the BYPASS key toggles bypass on and off. When the switch is lit (red), the bypass is ON – the input signal is routed to the output.

INPUT / OUTPUT

These control the overall input and output gain. Unity is at 12 o' clock. They both have a +/- 10dB range.

The input level is indicated by the LED next to the dial.

It has a VU like response, going red when the level exceeds +4dBu (0VU). For the drive engine to operate at its optimum, it's best to set the input gain to get the signal level in the 'sweet spot'. That's when the red led only occasionally blinks, but is not constantly lit.

The output controls the level post overdrive, so this doesn't impact the sound.

DRIVE



The DRIVE knob sets the amount of overdrive that the signal gets.

When the signal levels are in the 'sweet spot', there is virtually no change in overall sound level as the amount of drive is increased or decreased. Only the sound gets more or less overdriven.

The MOD knob controls the amount of modulation of the overall drive by the sidechain. This means that the output of the sidechain can either increase (knob turned to the right) or decrease (knob turned to the left) the amount of drive.

When the knob is centered, there is no modulation.

Dynamic Drive:

The sidechain turns the audio signal into a control signal, which corresponds to the loudness of the audio. This control signal, by setting of the MOD knob, either increases (expansion) or decreases (ducking) the amount of drive to the audio signal.

In case of expansion, when the audio signal gets louder, there will be more drive applied. In case of ducking, there will be less (or no) drive when the signal gets louder.

The sidechain has an attack-release control, which adds time delay to the drive control signal. There is also selectable pre-filtering of the audio, to cut high or low frequency response of the drive modulation. (see <u>sidechain</u> for more info)

The amber LED always displays the amount of actual drive to the signal, independent of the position of the drive knob.

HARMONICS

The HARMONICS control creates a mix of odd and even harmonics. With the knob turned to the left, there are mostly even harmonics. The LED is green. And turned to the right there are only odd harmonics. The LED is red. Anything in between creates a mix of both.

Generally the even harmonics produce a softer/warmer kind of overdrive, while odd harmonics sound harsher/brighter.

The harmonic spectrum is somewhat dependant on the DRIVE setting.

At high overdrive, the signal will always contain odd harmonics.

The HARMONICS mix can be very subtle and its impact is more pronounced at low to medium drive levels.

SIDECHAIN



The sidechain is either fed from the main audio inputs, or from the <u>external</u> input. This circuit converts the audio signal into a control signal that corresponds to the *envelope* of the audio. This control signal is routed to the drive section – see <u>dynamic drive</u>.

The audio signal can be prefiltered before it's turned into an envelope by an analogue 12dB/oct Low- and High pass filter.

Pressing the FILTER key toggles between Lowpass Filter (top LED is lit), Highpass Filter (bottom LED is lit) and No Filter (no LEDs lit).

This is very usefull to either cut the bass or have only the bass before being transformed into the envelope.

The ATTACK and RELEASE knobs add time to the rise and fall of the envelope.

Pressing the SOURCE key toggles between internal (main input) signal and external signal. The external source signal doesn't go through the prefilters.

CONTOUR



There are several contour settings (or 'modes') that can be selected. They shape the frequency response of the overdrive. They do not change the frequency response of the input signal.

The mode is shown on the display. The 'L' modes handle the low and low mid frequency response, the 'H' modes the high and high mid response, the 'C' modes are combinations of L and H. There is also the 'flat' mode, indicated by '--' which means that there is no countour mode selected. The overdrive frequency response is flat. This is the default setting.



Press the *contour* key to switch the display to the current mode, if it wasn't already. The up/down arrow keys can be used to scroll through all the modes.

The display will blink when navigating to a new mode. To activate this mode, press the *contour* key again. The display will stop blinking.

List of contour modes:

- LF low freq
- L2 low mid freq
- L3 low & low mid freq
- HF high freq
- H2 high mid freq
- H3 high & high mid freq
- C1 low & high freq (LF+HF)
- C2 low mid & high mid freq (L2+H2)
- C3 low & high mid freq (LF+H2)
- C4 low mid & high freq (L2+HF)

PRESETS



All settings of the overdrive – switches and knobs – can be stored internally in 'presets' and recalled and/or edited later. The preset number is shown on the display. Press the *preset* key to switch the display to the current preset.

The default mode is 'manual', no preset is selected and all settings correspond to the actual positions of the knobs. This is indicated by '__'.



Recalling a preset:

Use the up/down keys to navigate through the presets. The display will start blinking when preselecting a different preset number.

To activate this preset, press the *preset* key again. The display will stop blinking.

The new preset is now activated and its settings are used by the overdrive engine. Note that now the positions of the knobs may not correspond anymore to the internal setting. (unless 'manual' was selected)

When a knob is now turned, its value will override the preset one and is now used by the overdrive. The display will show a small dot ('.') next to the preset number, indicating that a knob value has been changed compared to its preset value.

To set the knob back to the preset value, turn slowly untill the dot disappears. This means that the knob position now corresponds to the preset value.

Storing a preset:

Use the up/down keys to navigate through the presets. The display will start blinking when preselecting a different preset number.

Or use the same preset as selected before. (= overwrite)

Press and hold the *preset* key for about 2 seconds. The display will go blank and then return to the preset number. The settings are now saved.

MIDI

The NEON DRIVE responds to *midi control change* and *midi program change* messages received on the midi in port.

The unit is set to a dedicated *midi channel* and will only respond to messages on that channel. All other channels are ignored.

Change midi channel:

Hold down the CONTOUR switch and press FILTER.

The display will now show the midi channel. This can be changed by using the up/down keys. Now exit this setup by pressing the contour or preset switch and the new midi channel will be stored internally. Even after turning off the unit, the new channel will remain active.

When valid midi data is received, the overdrive controls will jump internally to the new values. Control change data commands the knob and switch values. Program change selects the contour modes. See midi # table.

It is also possible to export a 'snapshot' of the current settings. All the control data will be sent over the midi out port and thus can easily be recorded by any DAW.

Export settings:

Hold down the CONTOUR switch and press SOURCE. The unit will transmit all parameters on the midi out port.

<u>MIDI #</u>

ATTACK time
RELEASE time
INPUT gain
DRIVE
MOD
HARMONICS mix
OUTPUT gain
SOURCE select $(0063 = intern, 64127 = extern)$
FILTER select $(00 = \text{flat}, 0163 = \text{LP}, 64127 = \text{HP})$
BYPASS select $(0063 = off, 64127 = on) **$
Flat contour
Flat contour LF
Flat contour LF L2
Flat contour LF L2 L3
Flat contour LF L2 L3 HF
Flat contour LF L2 L3 HF H2
Flat contour LF L2 L3 HF H2 H3
Flat contour LF L2 L3 HF H2 H3 C1
Flat contour LF L2 L3 HF H2 H3 C1 C2

10 C4

** bypass switch status is not exported over midi out

Tips 'n Tricks

For optimum response of the drive circuit, it's important to have the signal levels in the 'sweet spot'. This is especially the case when using dynamic drive.Use the input gain to adjust if necessary. The level indication should be green, and occasionally blink red on a peak.

For gentle colouring of the sound, try deliberately lowering the input gain to feed a lower signal to the drive circuit. This makes the drive control even more subtle.

If on the other hand massive amounts of overdrive is needed, turn up the input gain.

Be aware that in both cases the dynamic drive may behave a bit more unpredictable as the sidechain is not getting an optimal level and is either not outputting much control signal, or is constantly clipping.

For static drive settings it makes no difference.

Ducking for sources with high attack or big dynamics. Set a fast attack on the sidechain and tweak the release for best response. Turn up the drive and set the mod negative. Overdrive will 'duck' on attacks and come up on sustain.

Expansion with slow attack to eliminate attack distortion. Set a slow attack and a fast release. Turn down the drive this time but set the mod positive. Overdrive will 'swell' on long notes/sounds.

Using the external source input to control the dynamic drive. For example overdriving a vocal track controlled by a bass or guitar track, or a 'prepared' track that is fed in the sidechain.

When in preset mode, pressing the preset key always loads the preset, even if it is set to the current preset. Any controls (or contour) that were changed will be reverted to the preset values.

The preset store/recall is a clever way to A/B listen to settings that differ just a little bit.

The midi controller for the drive is the 'modulation wheel' (cc 01). Midi keyboards that have a modulation wheel can be hooked up to control the overdrive in realtime.

SPECIFICATIONS

Input impedance	12 kOhm (balanced)
Output impedance	50 Ohm (balanced)
S/N ratio	86dB (+4dBu, 22kHz BW, unity gain)
Maximum output level	+22dBu (balanced, 22kHz BW, ≥ 2kOhm, ≤ 1% THD)
Channel crosstalk	-78dB (+4dBu, 20-20kHz)
Power	AC 115V/230V (+/-10%), 50-60Hz, 20W
Weight	3,2kg