Oxydsp

OxyOTT User Manual

Contents

Overview

OxyOTT is a multiband dynamics effect with up to three bands, closely replicating and extending the famous OTT sound widely used in modern electronic music.

It aims to quickly provide you with great results on all kinds of input types while also providing in-depth control and is suitable for usage in sound design, mixing and mastering in almost any genre.

Global scaling parameters such as Amount, Time, or Mix allow you to easily adjust the intensity of the effect on the fly.

In case more control is needed, each band features two-sided dynamic processing (two thresholds & ratios) with full control over gains, ranges & timings, allowing for various combinations of downwards compression, upwards compression, gating and expansion.

It improves the classic OTT sound with many new features, such as mid/side processing, multiple different compression styles, optional linear phase crossovers, up to 4x oversampling, adjustable lookahead & ranges per band, amount per band and a clipper with variable softness.

Controls

- Right-clicking on a slider/knob opens a value editor to assign a precise value. Simply type in the desired value and hit return to confirm.
- Double-clicking on a slider/knob resets it to the default value.
- Holding Cmd/Ctrl while dragging a slider/knob lowers the drag sensitivity for finer adjustments.
- Save/Delete dialogs can be confirmed by pressing return or exited by pressing escape.
- Menus such as the preset browser can also be navigated using the keyboard arrow keys.

Activation

Thank you for purchasing OxyOTT!
Please enter the license key you've received with your purchase to activate the plugin (internet connection required).

Enter license key

Activate

- When first opening the plugin, it will ask for your license key, which you should've received via email shortly after purchase. If you haven't received a key (check your spam folder too), please message support@oxydsp.com with your order number.
- Activating requires an active internet connection and binds the activation to the current machine. After that, the plugin will work offline until your hardware changes substantially.
- If the plugin detects hardware changes, it will give you the option to simply transfer the activation to the current machine (internet connection required).
- There can be 2 machines activated at the same time per license. To activate another machine, you need to deactivate one first.
- Deactivation can be found in the Options menu at the top right.
- Do not share your license key, it gives anyone who knows it control over new activations and you might be locked out as a result.
- If you believe someone else has access to your license key, please message support@oxydsp.com with your order number.

Top Bar
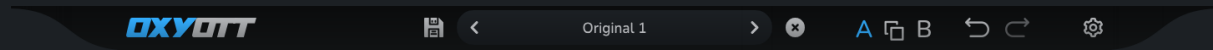
The Top Bar includes several features to manage the plugin's state.

- **OXY - Bypass**
  Main bypass; fully bypasses the plugin processing.
- **Floppy Disk – Save Preset**
  Opens the Save Preset dialog. Enter the preset name and hit return/press Save, you'll then find the preset under 'User Presets' in the preset browser. Existing presets with the same name will be overwritten.
- **X – Delete Preset**
  Opens the Delete Preset dialog. Hit return or press Delete to delete the current user preset.
- **Preset Browser**
  Click in the center to open a dropdown menu with the list of selectable presets. Use the arrows to cycle through presets.
- **A/B**
  Use A/B to store 2 plugin states at the same time and switch between them by clicking on the non-selected state. Use the copy symbol in the middle to copy the selected state to the non-selected one. Note that when saving state/your project from the DAW only the selected state will be saved.
- **Undo**
  Undo the last performed action.
- **Redo**
  Redo the last undone action.
- **Cogwheel - Options**
  Opens a list of options and useful tools.

Options
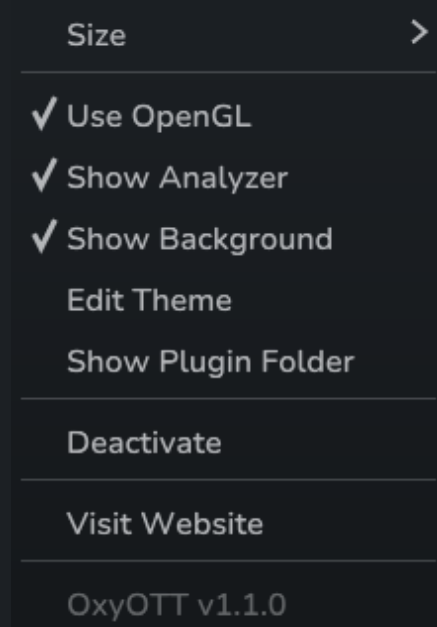
- **Size**
  Change the size of the UI.
- **Use OpenGL**
  Enables OpenGL rendering for better UI responsivity. Recommended to enable on Windows.
- **Show Analyzer/Show Background**
  Disables UI elements for reduced UI load if needed.
- **Edit Theme**
  Opens the Theme Editor.
- **Show Plugin Folder**
  Opens the local directory containing user presets and configuration files.
- **Deactivate**
  Opens the license deactivation dialog.
- **Visit Website**
  Opens oxydsp.com in your browser.

Spectrum Display
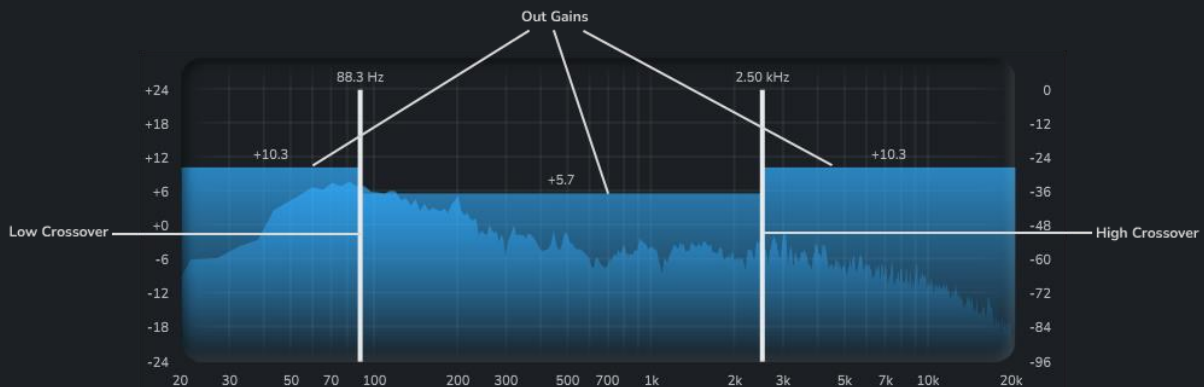
The Spectrum Display gives you a live spectral overview of your input signal to easily determine the location of important frequencies, such as fundamentals of your instruments or unwanted content.

Adjust the band-splitting crossover frequencies by horizontally dragging the crossover bars.

Adjust each band's out gain by dragging the gain bars vertically for compensating the band's dynamic gain or to change the overall spectral balance like an equalizer.

Crossover

This option allows you to change the slope of the crossover filters. It effectively controls how much the bands bleed into each other. Use the 12dB/oct option for a more natural sound or the 48dB/oct option for a precise split. The 24dB/oct option is what is used in the original OTT effect. Higher slopes create stronger phase shifts with Linear Phase off and stronger pre-ringing with it on.

Linear Phase

Use the Linear Phase switch to toggle between Zero Latency and Linear Phase versions of the crossover filters.

Normally, the Zero Latency filters will result in phase shifts on the signal around the cutoffs. This will change the shape of your signal, especially for lower frequencies, and it can have various side effects, such as phase cancellation when dry/wet mixing (not the case when using the internal Mix!), making signals peak higher than before (clipped signals may be 'unclipped') and generally loosening up the sound. This has been a key part of the classic OTT sound; however, it isn't always desirable, especially when dealing with bass heavy input.

Linear phase mode makes the filters have a flat phase response instead and therefore greatly or fully reduces these side effects. The trade-offs here are: increased latency, potential pre-ringing, slightly increased CPU usage. Also, the Linear Phase filters have a short delay when updating, this should be kept in mind when automating the crossover frequencies.

Band Dynamics Settings

Each band dynamics section shows you the transfer curve, current input peak level, as well as the gain reduction and gain increase for the respective band. You can directly control the transfer curve by dragging the points related to the ratios and thresholds within the graph.
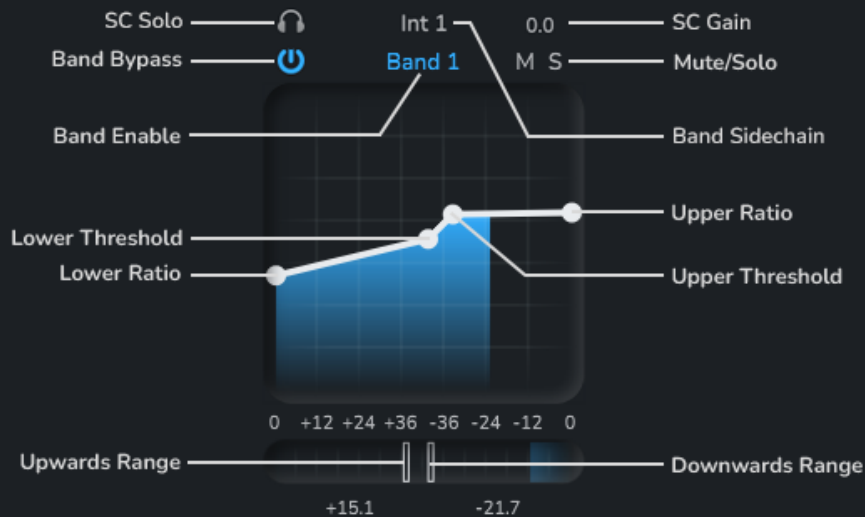
- **Band Bypass**
  Enables/disables the band's processing.
- **Band Enable**
  Enables/disables the respective crossover. Changes the number of bands. Band 2 can't be disabled.
- **M – Mute**
  Fully mutes the band.
- **S – Solo**
  Adds this band to the solo group, muting all non-solo bands.
- **Lower Threshold**
  Signal level in dB below which upwards compression or gating will engage.
- **Upper Threshold**
  Signal level in dB above which downwards compression or expansion will engage.
- **Lower Ratio**
  Ratio > 1 means upwards compression, ratio < 1 means gating.
- **Upper Ratio**
  Ratio > 1 means downwards compression, ratio < 1 means expansion.
- **Downwards Range**
  Limits the max gain reduction for the band. Full left setting sets the range to unlimited.
- **Upwards Range**
  Limits the max gain increase for the band.
- **Band Sidechain**
  Sidechain signal that triggers the dynamics for this band.
- **SC Solo**
  Allows you to listen to the selected sidechain signal. Note that this signal is not fully latency compensated when Lookahead is active.
- **SC Gain**
  Additional gain offset for the band sidechain. Not audible with SC Solo.

Types Of Dynamic Processing

OxyOTT's dynamic processing can go in two directions for each of the two dynamic stages, depending on the respective ratio. This results in the following four cases:

Downwards Compression

Attenuates signals above the upper threshold for upper ratios > 1. This is classic compressor behavior and can be used even with high ratios to give your sound a lot of pressure and density.

Upwards Expansion / Expansion

Boosts signals above the upper threshold for upper ratios < 1. Increases the dynamic range and can be used to make percussive sounds even punchier. Be careful with your gain compensation however, as the gain increase can easily put your signal above 0dB.

Upwards Compression

Boosts signals below the lower threshold for lower ratios > 1. This style is part of what makes the OTT sound so different from classic multiband compression. It can bring out all kinds of small details from your audio, as it boosts the quietest parts the most. It also increases the overall density, making it perfect for boosting the perceived loudness.

Downwards Expansion / Gating

Attenuates signals below the lower threshold for lower ratios < 1. Can be used to reduce unwanted noise or to tighten percussive sounds. This makes it especially useful for recorded instruments or vocals, as these usually come with a certain noise floor that would otherwise be boosted up by heavy processing.

Amount & Timings
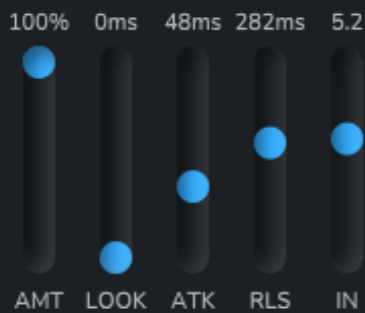
These settings affect both dynamics stages per band.

- **AMT – Amount**
  Scales all ratios & gains related to the band.
- **LOOK – Lookahead**
  Adjusts the smooth-in time for steep gain changes. Global Lookahead needs to be active.
- **ATK – Attack**
  The time it takes for the compression to fully engage once the signal triggers it. This can mean different things depending on the style settings.
- **RLS – Release**
  The time it takes for the compression to stop engaging once the signal stops triggering it. This can mean different things depending on the style settings.
- **IN – In Gain**
  Apply variable gain before the band's processing.

Gain Section

- **IN – In Gain**
  Input gain for the main signal.
  This is scaled by other parameters like Amount by default. Click the 'IN' label to set the parameter to absolute, which will ignore scaling.
- **OUT – Out Gain**
  Output gain for the main signal.
  This is scaled by other parameters like Amount by default. Click the 'OUT' label to set the parameter to absolute, which will ignore scaling.
- **SC – Sidechain Gain**
  Input gain for the external sidechain. This parameter is never scaled. Click the 'SC' label to toggle Sidechain Through mode, which adds the external sidechain signal to the output at the very end while compensating the plugin's latency.

External Sidechain

Since version 1.1.0, OxyOTT has an external sidechain input. Please refer to your DAW's manual if you don't know how to send audio to this input.

Using the external input allows for several interesting techniques, such as: Using the external sidechain to trigger dynamics on the main audio, using SC Through to latency compensate a signal without OxyOTT affecting it (for example master bus processing without compressing the main drums) or using the SC Mix & SC Invert features to adjust/remove the presence of a sound in the internal sidechain.

External Sidechain - Special

- **X – Sidechain Mix**

Mixes the main input into the external sidechain, allowing you to balance how much each signal contributes to the dynamics processing.

- **Ø – Sidechain Invert**

Inverts the phase of the external sidechain. This allows for special setups in combination with Sidechain Mix, such as reducing the level of a sound that is present in both signals by phase cancellation.

Sidechain Options

Each band allows selecting from 8 signals to be used as sidechain to trigger the dynamics processing, also allowing to "mismatch" between the bands.

Warning: When changing the sidechain routing from the default while using upwards compression, silence in the sidechain can create extreme boosts on a not so silent live signal.

- **Int 1-3**
  Low, mid, and high bands of the main input.
- **Int W**
  Wide band internal sidechain. This is basically the same as the main input signal.
- **Ext 1-3**
  Low, mid, and high bands of the external input.
- **Ext W**
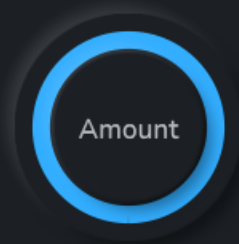 Wide band external sidechain. This is basically the same as the external input signal.

Global Scaling Parameters

Amount

Scales all gains & ratios for all bands, as well as the global in & out gain and the clip drive. This is the main knob to quickly adjust the intensity of the effect.

Time

Scales the attack & release timings for all bands, allowing you to quickly make the effect more aggressive or punchier.

Mix

The mix control is different from your regular dry/wet mix in that it does the dry/wet mixing individually for each band. This is done to avoid phase cancellation between the dry and wet signals when operating the crossover in Zero Latency mode.

Above/Below

Scales the Upper and Lower ratios respectively. You might also know this as Downward and Upward controls in other effects. Values above 100% can fold the transfer curve past an infinite ratio, which results in fold back or fold up behavior. This can create an intense pumping effect and strong detail amplification.

Attack/Release

Works the same as Time but gives you more detailed control by adjusting Attack and Release individually.
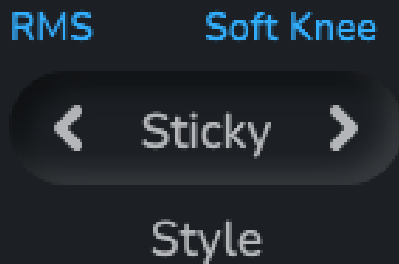
Mix M/Mix S

Works the same as Mix but gives you more detailed control by adjusting the Mid and Side stages individually.

Style

RMS   Soft Knee

< Sticky >

Style

These settings change the algorithm used to apply the dynamics for each band. There are three algorithms in total, each with both Peak & RMS versions and they can have drastic differences in sound.

- **RMS**
  If active, the dynamic processing will be triggered by an approximated RMS version of the input signal. This smooths out short peak fluctuations and results in softer sounding processing.
- **Soft Knee**
  If active, the transfer curves won't have hard edges at the thresholds but rather gradually approach the respective target ratios around the thresholds, resulting in a more seamless sound.
- **Style 1 – Sticky**
  Closely replicates the original OTT style with aggressive, but gluey characteristics.
- **Style 2 – Punchy**
  Closely replicates the characteristics of another widely used OTT effect. Usually creates harder sounding transients than Sticky. To stay close to the inspiration, it has a fixed attack time while in RMS mode.
- **Style 3 – Gentle**
  Tends to result in a less clicky and smoother sound than the other styles. With this style, the attack timings also affect the release timings.

Lookahead

Lookahead is a technique in digital dynamics processing to counteract the delayed nature of the applied gain automation. Especially the phases where gain is reduced from downwards compression will usually miss the peak that initially triggered them based on the attack time. This can be desirable to give your sound a certain punch or groove, but it can also result in unwanted clicks with short attack times and high ratios. In this case, Lookahead can be used to give the processing some time to smooth-in steep attenuations before the triggering peak even happens by adding a fixed amount of latency. This can greatly increase the density and smoothness of your sound and perfectly adds to the classic OTT sound.

Offset   0ms
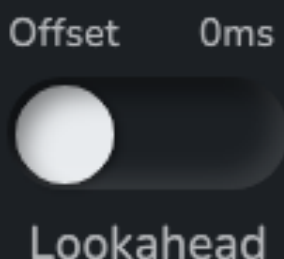
Lookahead

- **Offset**
  Offsets the audio signal from the dynamic gain by a short amount (0.045ms latency) to slightly attenuate clicks. Works independently from the Lookahead switch.
- **Lookahead**
  Global lookahead switch, needs to be active for the band lookahead timings to work. Adds 20ms of latency.
- **Lookahead Min**
 Global minimum lookahead time for all bands.

Mid/Side

OxyOTT offers the option to perform split processing on both the mid and side information of your signal. This allows for in-depth multiband stereo image adjustments and can bring out interesting details especially in the sides by using upwards compression. The crossovers, as well as all the band controls can be adjusted individually for each state. Global settings affect both states.
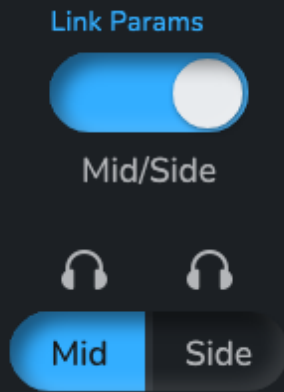
- **Link Params**
  While this is active, any parameter changes in either mid or side state are reflected to the other state.
- **Mid/Side**
  Global toggle to enable or disable Mid/Side processing.
- **Solo Mid / Solo Side**
  Processes & outputs only the selected state to help you make detailed adjustments.
- **State Switch**
  Use this switch to toggle between viewing either the mid or side state in the UI.

Clipper

Use the clipper to chop off unwanted peaks or to add nice saturation to your sound.
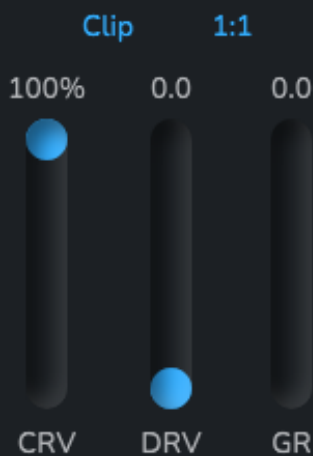
- **Clip**
  Toggles the clipper. Be aware that activating can cause a sudden jump in volume with high drive values.
- **1:1**
  Toggles auto gain. Reduces gain by the same amount as drive after the clipper.
- **CRV – Curve**
  Gradually softens the shape of the transfer curve. 100% - Hard Clip, 0% - Soft Clip.
- **DRV - Drive**
  Up to 24dB of gain into the clipper. Scaled by Amount.
- **GR – Gain Reduction**
 Shows how much of the signal has been clipped.

Oversampling

Oversampling reduces aliasing artifacts and increases precision by internally processing at a higher sample rate. This increases CPU usage, and the difference might be small, so be thoughtful when using it.

- **Clip Only**
  Only apply oversampling to the clipper to save CPU resources, since the clipper benefits the most from it.
- **Oversampling**
  Multiplier applied to the host sample rate, up to 4x.

Theme Editor
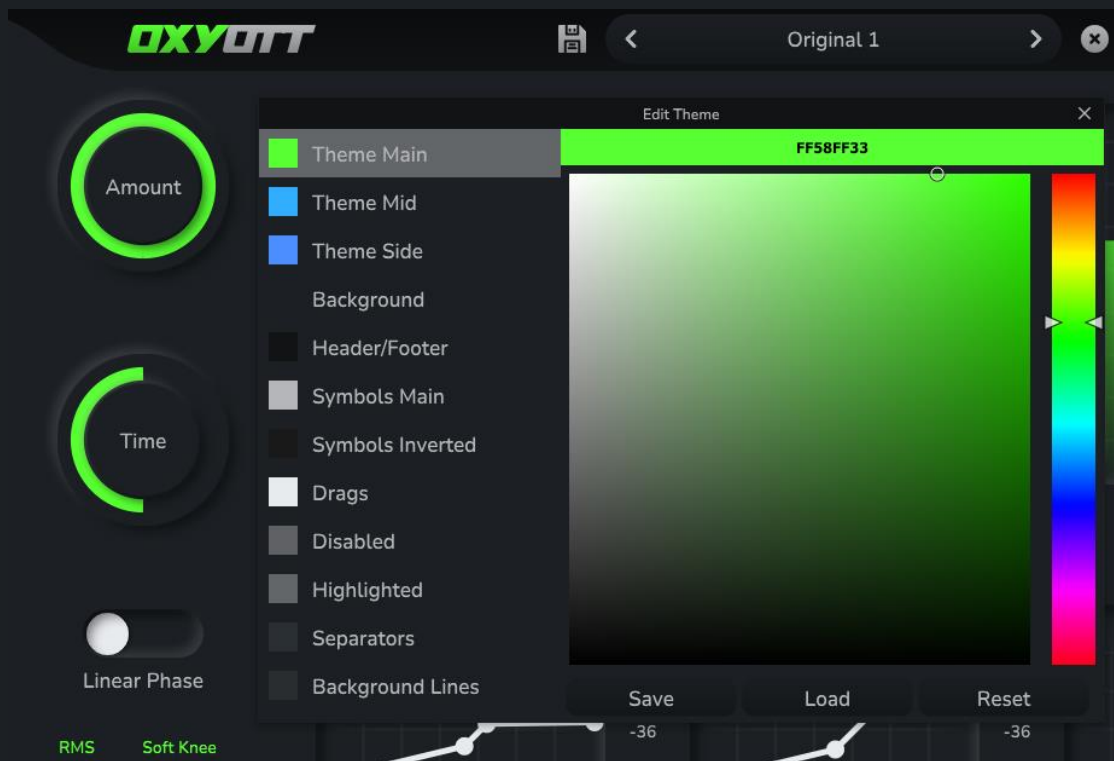
The Theme Editor can be accessed from the Options menu at the top right. It lets you adjust the color of almost every element in the UI by color groups. Select the group you want to edit from the left and use the color editor to change the selected group in real time. Colors can also be entered manually in hexadecimal (AARRGGBB).

- **Save**
  Saves the current theme so it will be applied the next time you open the plugin.
- **Load**
  Applies the saved theme file.
- **Reset**
  Resets the theme to factory default, press Save to make the change persistent.

Bug Reports

If you believe there to be a bug in OxyOTT or have trouble getting it to run on your system, please contact support@oxydsp.com. Make sure you are using the latest version of OxyOTT and be sure to include important information such as: Host software, host software version, operating system, operating system version and potentially steps to reproduce the issue.

OxyOTT Software License Agreement

PLEASE READ THIS SOFTWARE LICENSE AGREEMENT ("LICENSE") CAREFULLY BEFORE USING THE SOFTWARE. BY USING THE SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS LICENSE.

1. Grant of License. The Licensor grants to you a non-exclusive, non-transferable license to use the software product identified above (the "Software") on any single computer for which it was designed. You may not use the Software on more than two computers or allow the use of the Software by multiple users without the express written consent of the Licensor.

2. Ownership. The Software is owned and copyrighted by the Licensor. Your license confers no title or ownership in the Software and should not be construed as a sale of any right in the Software.

3. Copies and Modifications. You may make copies of the Software solely for personal backup purposes. You may not copy the printed materials accompanying the Software. You may not modify, adapt, translate, reverse engineer, decompile, or disassemble the Software.

4. Transfer. You may not transfer or distribute the Software to any other party without the prior written consent of the Licensor.

5. Termination. This License is effective until terminated. You may terminate this License at any time by destroying all copies of the Software. This License will terminate immediately without notice from the Licensor if you fail to comply with any provision of this License.

6. Disclaimer of Warranty. The Software is provided "AS IS" without warranty of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The Licensor does not warrant that the functions contained in the Software will meet your requirements or that the operation of the Software will be uninterrupted or error-free.

7. Limitation of Liability. In no event shall the Licensor be liable for any special, incidental, indirect, or consequential damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use the Software, even if the Licensor has been advised of the possibility of such damages.

8. Governing Law. This License shall be governed by and construed in accordance with the laws of the jurisdiction in which the Licensor has its principal place of business.

9. Entire Agreement. This License constitutes the entire agreement between the parties with respect to the use of the Software and supersedes all prior or contemporaneous understandings regarding such subject matter.

10. Severability. If any provision of this License is found to be invalid or unenforceable, the remaining provisions shall remain in full force and effect.

BY USING THE SOFTWARE, YOU ACKNOWLEDGE THAT YOU HAVE READ THIS LICENSE, UNDERSTAND IT, AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS.

OxyOTT Software License Agreement

3rd-Party Licenses

pffft

Copyright (c) 2013 Julien Pommier (pommier@modartt.com)

Based on original fortran 77 code from FFTPACKv4 from NETLIB,
authored by Dr Paul Swarztrauber of NCAR, in 1985.

As confirmed by the NCAR fftpack software curators, the following
FFTPACKv5 license applies to FFTPACKv4 sources. My changes are
released under the same terms.

FFTPACK license:

http://www.cisl.ucar.edu/css/software/fftpack5/ftpk.html

Copyright (c) 2004 the University Corporation for Atmospheric
Research ("UCAR"). All rights reserved. Developed by NCAR's
Computational and Information Systems Laboratory, UCAR,
www.cisl.ucar.edu.

Redistribution and use of the Software in source and binary forms,
with or without modification, is permitted provided that the
following conditions are met:

- Neither the names of NCAR's Computational and Information Systems
Laboratory, the University Corporation for Atmospheric Research,
nor the names of its sponsors or contributors may be used to
endorse or promote products derived from this Software without
specific prior written permission.

- Redistributions of source code must retain the above copyright
notices, this list of conditions, and the disclaimer below.

- Redistributions in binary form must reproduce the above copyright
notice, this list of conditions, and the disclaimer below in the
documentation and/or other materials provided with the
distribution.

THIS SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND,
EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE WARRANTIES OF
MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND
NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT
HOLDERS BE LIABLE FOR ANY CLAIM, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES OR OTHER LIABILITY, WHETHER IN AN
ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE
SOFTWARE.

json

The class is licensed under the MIT License: