OverTone DYN500

www.overtonedsp.co.uk

Manual

Contents

Section 1 - Introduction

1.1 - What is the DYN500?

The DYN500 AAX plug-in for Windows 7 or later and compatible audio workstation applications comprises a versatile dynamic range compressor with a valve overdrive characteristic at high output levels, similar to analogue 'tape saturation'. It is intended to be used with the EQ500 Channel EQ to form a complete channel strip dynamics and EQ processing solution for Digital Audio Workstations.

1.2 - Main Features:

- AAX Native plug-in for 32 and 64Bit Windows 7 or later and compatible host applications.
- Soft Knee compression characteristic, ensures a gentle transition from 1:1 ratio below the threshold to the selected ratio above it.
- Vintage overdrive stage adds extra 'tape saturation' or tube overdrive 'warmth' to the sound when driven at high levels.
- Physical Control Weighting replicates the feel of high quality rotary controls, also improving accuracy for small control changes.

1.3 System Requirements:

A PC Running Windows 7 or later and an AAX Native compatible host application.

1.4 - About the manual:

This manual covers the installation and use of the DYN500. Where possible, examples are used, although some aspects of installing and integrating the software with your system will be dependent on the particular combination of operating system and host application you are using and in this case it is only possible to give generic examples that serve to show the principle rather than the actual steps necessary.

Most examples are illustrated with screenshots of the features being discussed.

Section 2 - Installation

2.1 Contents of the zip archive:

Within the zip archive that contained this manual are the installer executables. To install the plug-in, run the installer and it will guide you through the installation process.

2.2 Installing the plug-in:

AAX Native for Windows:

Run **DYN500-AAX.exe**
This will install the plug-in suitable for use on 32 or 64Bit systems.

NOTE: AAX defines specific locations for compatible plug-ins. For Windows / Pro Tools this is normally:

`Program Files\Common Files\Avid\Audio\Plug-Ins\`

The installer will permit other locations however you should use only the installer recommended location unless you are confident of a specific reason for an alternative.

The installer will only install the files necessary for the plug-in to function. It will not install anything else on your computer.

2.3 Uninstalling the plug-in:

To uninstall the plug-in, go to:

`Control Panel -> Programs and Features`

and select **Remove** or **Uninstall** for the DYN500-AAX.

Note: The plug-in can be manually removed from your AAX plug-ins folder, if for example the install / uninstall process is unsuccessful, however, ***only do this if you understand the risks of manually removing / deleting components from your system, and if possible, always make sure you have a recent backup before installing / uninstalling applications or software components****.*

Section 3 - Operation

3.1 - The Graphical User Interface:

This is the DYN500 front panel. You control it by clicking and dragging on the knobs or switches. Click on a knob and drag upwards to increase the value (turning it clockwise) or down to decrease the value (turning it anticlockwise). Some of the controls have indents – these manifest themselves as areas in the controls rotation where the reluctance to move is increased so you have to drag a bit 'harder'. The intention is to make them behave like real controls which may have a 'click stop' at 0dB for example. You can also move the controls by placing the mouse pointer over them and using the scroll wheel.

Double Clicking on a control will reset it to its 'default' position.

3.2 - Status Display

As the controls are operated their value will be displayed in the status display at the top of the front panel. If at any time you need to know a control's setting, just click on the control and its value will appear in the display.

3.3 - Physically Weighted Controls

To improve the feel of the controls, and make them behave more as hardware equivalents do, the control knobs have been given a small amount of physical 'inertia'. This weighting does not affect the 'law' of the control, only the way it responds to mouse movement. When you begin to drag on a control, or change direction, its 'gearing' will be at a higher resolution (which also helps to locate more precise settings). As you continue to drag the control, it will become more closely geared to the mouse movement, meaning that you can still make significant control changes without large and awkward movements of the mouse.

3.4 - The Controls

The front panel controls allow you to adjust the compressor effect:

1. Input Gain

The input gain control selects the amount of gain applied to the signal before it enters the compressor. It has an 'indented' region at 0dB. It will require a bit more mouse effort to turn the control around the indent, a bit like a 'click stop' on a conventional analogue control. This is to help you quickly find the 0dB point again if you need to.

2. Threshold

The Threshold control sets the point at which the compressor begins to act. For example, if the threshold is set to -20dB, signals quieter than -20dB will pass through the compressor without being affected. If a signal larger than the threshold enters the compressor, it will be progressively attenuated depending on the setting of the ratio control.

3. Attack (ms)

The attack control sets the speed with which the compressor reacts to signals which are louder than the threshold. The shorter the time, the quicker the compressor will respond to changes in input level and reduce loud signals. Set the attack to be fast (anticlockwise) if you want to aggressively control loud signals and don't want any of the initial 'transient' to get through.

4. Gain Reduction Meter

The gain reduction meter shows the amount of gain reduction (attenuation) being applied to the signal as it passes through the compressor. The amount of attenuation is dependent on the threshold and ratio settings, Increasing amounts of gain reduction mean the compressor is having to act more strongly to control the level of the signal.

A note about side-chain time constants and meter ballistics:

The speed with which the meter responds to a change in the gain is determined by the Attack and Release settings. This is because the meter is showing the attenuation calculated by the level detector in the side-chain. The attack and release *envelope* has a non-linear slope, similar to the charge/ discharge curve of a capacitor in analogue circuitry. As such the attack time is calculated as the time taken for the side-chain level to reach approx 2/3 of its maximum. The release time is calculated as the time taken for the side-chain level to decay to approx 1/3 of its initial value. Therefore it is possible that the meter will appear to take longer than the release settings would seem to indicate for it to decay to zero.

5.Release [s]

The release control sets the speed with which the compressor recovers after reducing a loud signal. If you set this to a short time (anticlockwise) the compressor will recover quickly, but this can lead to an audible 'pumping' of the signal at high compression settings - this is normal for a signal processor of this type, and in some cases is perceived as a desirable effect. It depends upon the effect you are trying to achieve.

Note: With very short attack and release settings, the compressor may introduce some distortion as the side chain response time becomes close to the period of low frequencies present in the audio signal. In some cases this is a desirable effect (for 'dirtying' the sound a bit), once again, it depends upon the effect you are trying to achieve. All compressors have their own *sound* this is due to a combination of factors including the side-chain response. This particular one is modelled on some of the older valve units.

6. Ratio:

The ratio control sets the amount of compression applied to audio which is louder than the threshold. In simple terms, the ratio is the ratio of the change in input level to the change in output level, so for example, if the compression ratio is set to 20:1, a change of 20dB in the input signal (assuming it is already above the threshold) will only result in a 1dB change in the output level. A ratio of 1:1 is equivalent to having no compressing action, in this case a change in input of 20dB results in a change in output of 20dB.

This compressor has a *soft knee* compression characteristic, that is, the change from no compression when the signal is below the threshold to compression determined by the ratio control when the signal is above the threshold is not an abrupt one. There is a gradual increase in compressing action up to a maximum set by the ratio control as the signal becomes greater than the threshold. This is similar to older analogue designs and is generally thought to give a more pleasing sound.

If you were to plot a graph of input level vs output level, the *knee* would be the change in gradient that occurs around the threshold point.

7. Output Level

The output gain control, sometimes referred to as *Make-up Gain*, allows you to add gain after the compressor, in order to *Make up* for attenuation by the compressor. This may seem like a strange thing to do since you want the compressor to tame loud signals, but consider, if you set the threshold to -20dB, and the ratio to a high value, you will get aggressive compression, which gives good control of the signal but it will struggle to get much louder than -20dB so will be subjectively quieter. By adding some *Make-up Gain* you can bring the signal back to the level it was before – only this time the louder peaks will have been well and truly squashed. Switch the compressor in and out of circuit while adjusting this control until you get the effect you require.

8. Effect In/Out:

This is the bypass switch which switches the compressor and its gain controls in or out of the signal path. With the switch off (not illuminated), the signal passes through unaffected by the compressor. With the switch on (illuminated) the compressor will begin affecting the signal.

3.5 - Valve Overdrive:

This is the last stage in the process through the compressor. There will always be a point at which the signal passing through the compressor cannot be turned down enough to stop it overloading or *clipping* – this is just as true of digital equipment as of analogue, at some point there will be a signal that is too large to represent either as an analogue voltage or a number in your sound-card. If this were just allowed to 'hard clip' to the maximum value allowed, the result would be a sudden harsh distortion of the signal, sometimes described as a 'splattering' sound, and not very pleasant.
One of the more pleasing aspects of old analogue equipment is the ability to overload gradually, softening the transition from clean to distorted sound before finally clipping to a limit. That characteristic is simulated here, if you turn up the gain through the compressor it will eventually distort, but with a more gradual onset similar to old valve based electronics or analogue *tape saturation*. In some cases you can get as much as an extra 3dB or so through the compressor even when it is clipping before you are aware of it – the sound just gets a little dirtier.

If you just want to use the overdrive sound without any compression, set the threshold control to 0dB and the ratio to 1:1 Then adjust the In and Out dB controls until you get the desired amount of overdrive. You may also consider placing the effect *pre* or *post* fader in order that you can control the level of the sound in the mix with or without affecting the amount of overdrive.

3.6 - Mono and Stereo operation:

The DYN500 plug-in is a stereo compressor. Most host applications will permit the use of a stereo plug-in in a mono channel. In stereo operation, the left and right side-chains are linked, in a 'loudest wins' configuration, ensuring both channels are subjected to the same gain reduction, determined by the strongest input signal. In a mono channel, the compressor should function normally, either with only one side active, or with both sides being fed identical signals (this will depend upon the configuration adopted by the host application).

3.7 - AAX multi-mono mode

AAX enables plug-ins to inform the host about specific (multi) channel formats they are compatible with. For example the DYN500 can be instantiated in both mono and stereo channels and there are specific mono and stereo versions of the plug-in for that purpose.
If the plug-in does not specifically support a given multi-channel format, Pro Tools may instantiate multiple instances of the mono plug-in. For example, it is also possible to add the mono DYN500 to a stereo channel in multi-mono format.
This will instantiate two independent compressors, one for the left and one for the right channels, however in this configuration, the side-chains will not be linked which may cause issues with stereo image stability.
For this reason it is advised to use only the stereo DYN500 for stereo channels to ensure the side-chains are properly linked to preserve stereo image stability.

3.8 - Demo Mode:

The first time the plug-in GUI / editor is opened, the following screen will appear if the plug-in has not been activated by a valid key. This indicates the plug-in is running in demo mode and will run with some restrictions. To obtain the full functionality you will need to purchase a valid activation key from the OverTone website at: http://www.overtonedsp.co.uk

NOTE: In demo mode, the audio will fade to silence every 60 seconds. This does not affect the bypassed signal path which means you may experience a drop in signal level when switching between effect and bypass modes if this coincides with the demo mode silence period. This is not a fault with the plug-in, and is entirely a function of the demo mode.

Section 4 - Presets

4.1 - Factory Settings

The DYN500 has five factory presets designed to provide a guide to some of the more common combinations of control settings.

Factory Preset 1 - Light Vocal Compression	Gentle 2:1 compression for vocal or acoustic instruments.
Factory Preset 2 - Heavy Vocal Compression	Heavier 10:1 compression for vocal.
Factory Preset 3 - Snare Hit Long	Heavy compression with short release time and extra make-up gain, extends 'tail' on snare hits etc.
Factory Preset 4 - Snare Hit Short	Heavy compression with long release time and extra make-up gain, controls the initial transient with less extension of the 'tail'.
Factory Preset 5 - Light Acoustic Compression	Low compression ratio for acoustic instruments.

4.2 - Preset Selectors

The selector buttons step through factory presets **which cannot be overwritten**. If you wish to modify a factory preset, select it, use the front panel controls to adjust the settings as required, then save it as a new preset using the host application's preset load and save options.

4.3 - Info Button

Clicking on the Info button will cause the status display to show the current version number. Normally the status display will show the control parameter values as they are adjusted, or the preset names when they are selected.

Section 5 - Technical Data

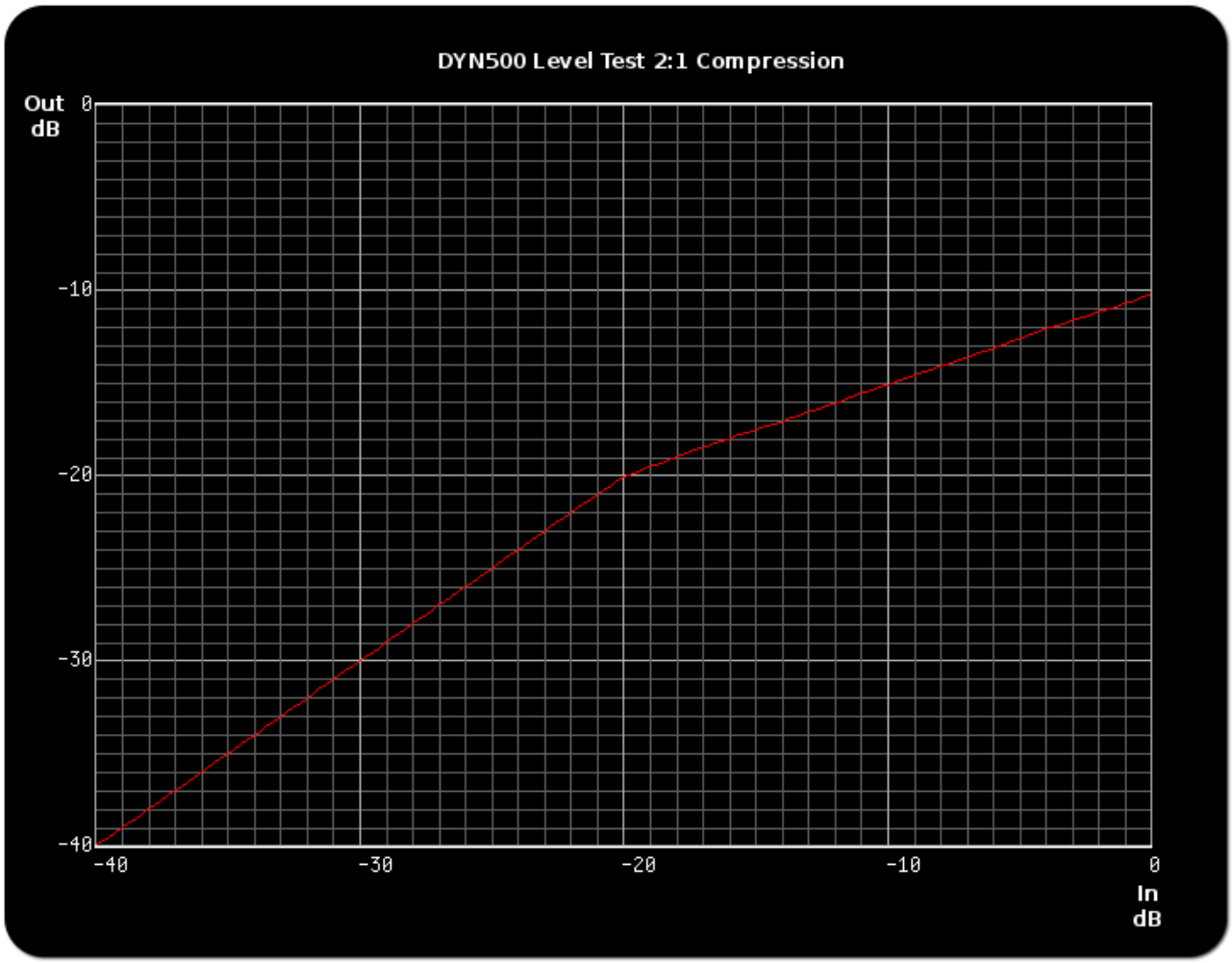
5.1 Technical Specifications

Frequency response (bypassed):	0Hz to Fs/2 where Fs is the sample rate.
Internal Processing:	32bit Floating Point.
Reference Level:	1.0f is assumed to represent 0dBFS
Dynamic range:	Limited by internal processing resolution (32bit Floating Point) and progressive limiting after 0dBFS
Input Gain	-6dB to +12dB
Compressor Threshold	0dB to -20dB
Attack Time	0.1ms to 10ms
Release Time	100ms to 1 Second
Compression Ratio	1:1 to 20:1
Make-up Gain	0dB to +20dB

Section 6 - Measured Performance

6.1 - Compression Ratio 2 : 1

Graph showing actual measured response to - 40 - 0 dBFS level sweep at 1kHz.



Test Signal:

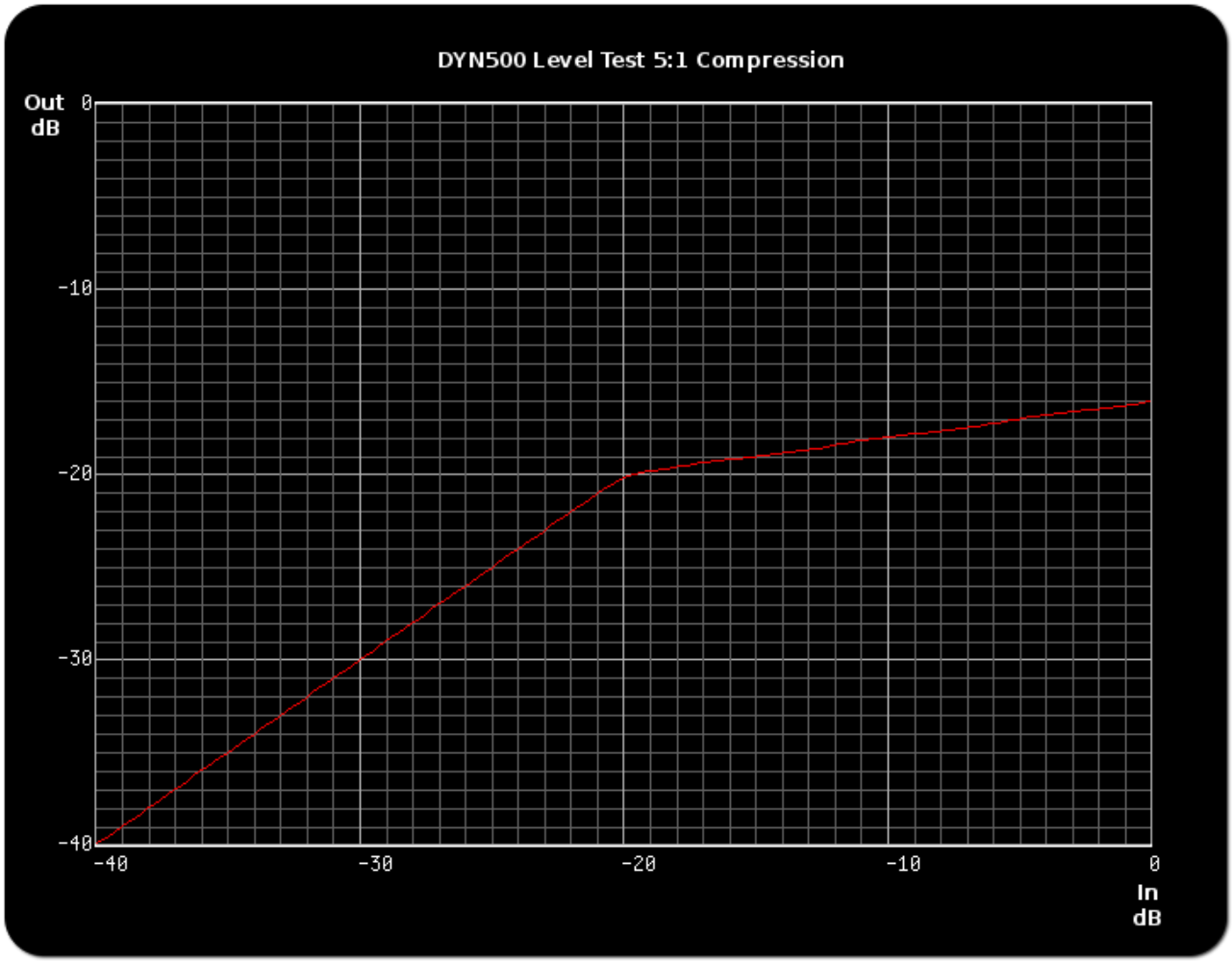
Input Signal :	- 40 - 0dBFS level swept sine at 1kHz
Sample Rate :	48kHz

Control Settings :

Threshold :	- 20dBFS
Ratio :	2 : 1

6.2 - Compression Ratio 5 : 1

Graph showing actual measured response to - 40 - 0 dBFS level sweep at 1kHz.



Test Signal:

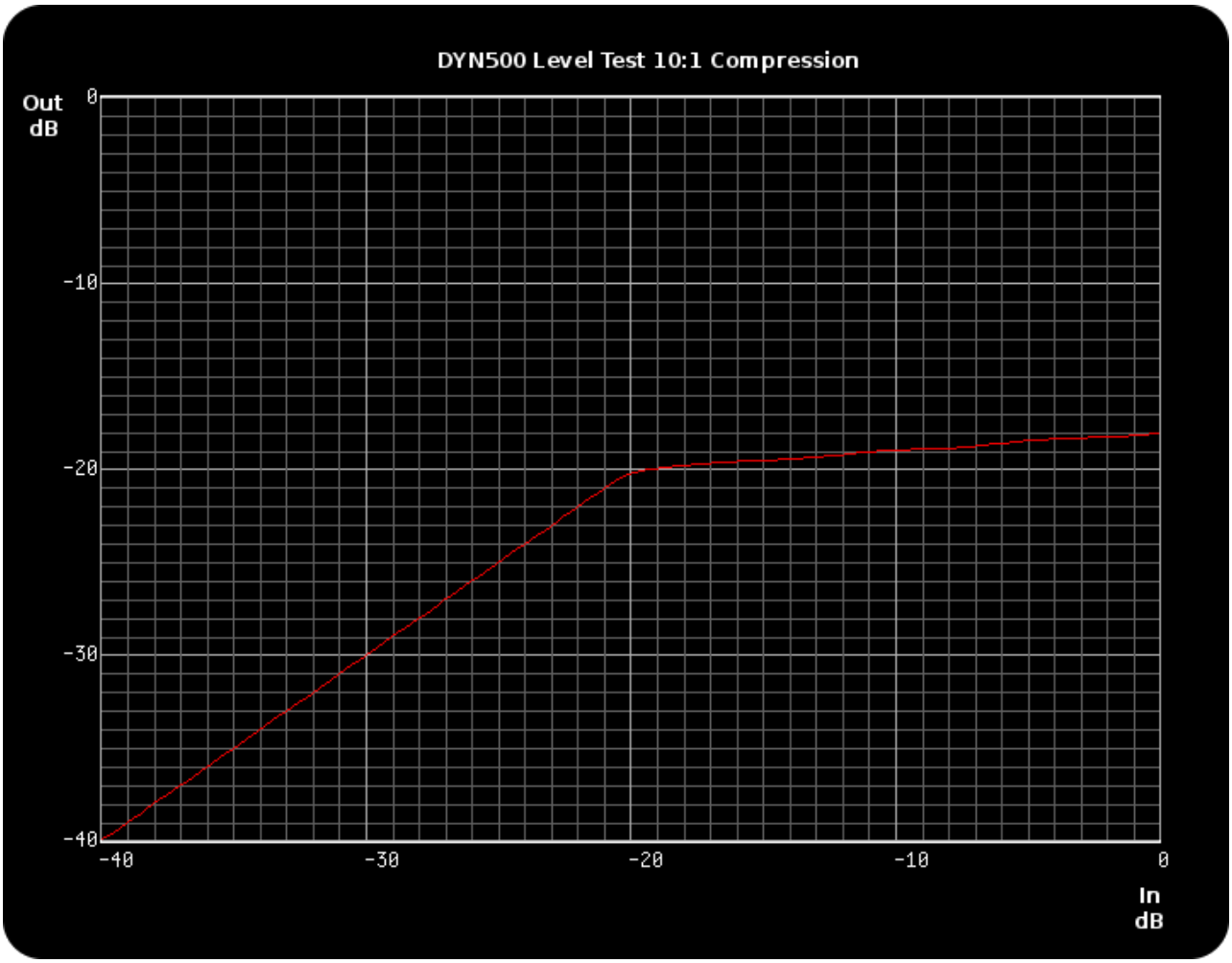
Input Signal : - 40 - 0dBFS level swept sine at 1kHz
Sample Rate : 48kHz

Control Settings :

Threshold : - 20dBFS
Ratio : 5 : 1

6.3 - Compression Ratio 10 : 1

Graph showing actual measured response to - 40 - 0 dBFS level sweep at 1kHz.



Test Signal:

Input Signal : - 40 - 0dBFS level swept sine at 1kHz
Sample Rate : 48kHz

Control Settings :

Threshold : - 20dBFS
Ratio : 10 : 1