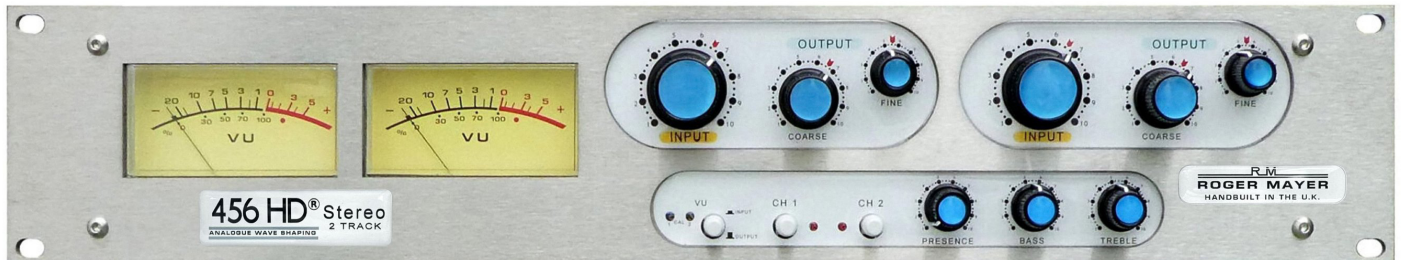




456 HD[®]

Stereo
ANALOGUE WAVESHAPING



MODEL 456HD-M VINTAGE SERIES

QUICK START GUIDE

- ALIGN INPUT, OUTPUT CONTROLS TO RED BULLETS.
- SET PRESENCE CONTROL FULLY LEFT AND BASS AND TREBLE VERTICAL
- INPUT 1KHz TONE OR PROGRAM MATERIAL TO: 0 VU or +4 dBu
- SWITCH CHANNEL ON – RED LIGHT ON
- MONITOR RECORDING OUTPUT LEVEL WITH VU METER OR BY THE DAW
- THE INITIAL 0 dB GAIN SETUP IS COMPLETE
- THE INPUT (TAPE IN) CONTROL THE AMOUNT OF HARMONICS ADDED
- THE OUTPUT CONTROLS (TAPE OUT) ADJUSTS THE 456HD[®] OUTPUT
- THE PRESENCE (BIAS) CONTROL ADD HIGH FREQUENCY SPARKLE AS IN TAPE BIAS ADJUSTMENTS

INTRODUCTION

The 456HD[®] Analogue Wave Shaping Process is an innovative new way to experience modern dynamic and harmonic control in real time with zero latency. It has been acclaimed by a number of World leading record producers and engineers and is used in primary tracking, remixing and mastering applications. It was inspired by the desirable qualities of a tape recording and can reproduce their dynamic compression and harmonic properties accurately to correct and enhance Pre & Post Digital Recordings. Over 800 channels are now in use and the 8 years of testing and development with top producers and engineers has achieved critical acclaim and has already featured on many records by top artists. It is universally recognised that this process is a game changer and not to be thought of as just another tape emulator. It brings a far more sophisticated approach to real time dynamic control and its musical performance exceeds that of any tape recorder previously produced and the 456HD[®] process now setting and pioneering new benchmarks.

Our latest Model the 456HD-M Vintage Series is an evolution from the experience and needs of industry producers and engineers from the many and varied uses for audio in production . Attention to engineering ergonomics with added features brings this new model to be a true step forward when using the 456HD® process.

The 456HD® process has been acclaimed by a number of World leading record producers and engineers it is used in primary tracking, remixing and mastering applications.

The MPG awards 2019 nominated the following RM users for top producer, top recording engineer and top mastering engineer.

Here are some quotes from these 2019 MPG nominees who are using the 456HD® process:

Dave Eringa Producer:

Dave Eringa has worked and played on albums by artists including Manic Street Preachers, Wilko Johnson and Roger Daltrey, The Who, Kylie Minogue, Tom Jones.

"The 456 process is an absolute game changer; it has completely filled the gaping hole that was left for me when we could no longer regularly use multi-track tape. The way the process made me go back to my engineering fundamentals of gain structure has made everything I do sound so much better. The 456 RM attaches this process on the back of the biggest sounding mic pre amps that I've heard & I really couldn't ask for any more! The 456 is a cumulative process - I find that when I've recorded everything through it just makes it so much easier to mix. It's not necessarily that each individual sound is enormously better in solo, it's just that everything gels together so much better. Just like when we were back on tape!! I haven't done a session without it since I first heard it & it's on pretty much every sound on the last Manics album & the Roger Daltrey solo record too. The stereo 456 box is also on the end of every mix I do! In terms of the recording, or mix bus, chain, it always sits at the very end just like tape did!"

Sean Genockey, Record Producer / Engineer and owner of Black Dog Records:

"I have been using Roger Mayer's 456 process exclusively for the last 4 years. Its unique wave shaping capabilities present me with source audio that is dynamic and full range frequency wise, this means that the audio is extremely malleable afterwards, and the simplest of equalisation changes has a huge affect, it sounds like tape but better as it doesn't have any of the technical drawbacks that we had with tape. I use it on every source on the way in and in a stereo fashion on the 2 bus during mix-down. The RM 58 limiter is now my go to for all vocal tracking, drums and 2 bus mix duties, simply amazing."

Ed Woods of Ed Woods Mastering in London:

"I have used the 456 unit a lot in my mastering chain. It is a wonderfully unique piece of gear that has found a place in my chain that would be difficult to replace. If I am looking to add characterful limiting and saturation, or just a little harmonics and colour then the 456 is my go to."

Reasons for using 456HD® Analogue Wave Shaping

- Recorded sounds have less undesirable digital recording artefacts and immediately sit better in the mix.
- Real time multi track recording and monitoring with zero latency.
- Mixing time is reduced.
- 2 track mixes have significant power increases whilst maintaining dynamics.
- A 456 processed 2 track mix will stream very well at even low quality settings.
- No extra DAW CPU load and unlimited simultaneous tracks can be digitally recorded only limited by your DAW when using the 456.
- No extra DAW CPU load and unlimited simultaneous tracks can be digitally recorded only limited by your DAW when using the 456.
- Quick and easy to set-up.

- Performance exceeds that of conventional mechanical tape recorders. Repeatable performance and no tape alignment or maintenance ever needed.
- Cymbals and Over Head Drums now have more definition and sustain and sound real again.
- Vocals have less sibilance and spitting.
- Continuous high speed independent processing of both positive and negative peaks with virtual zero attack and release time constants enables asymmetric sources: eg: kick drum to be recorded easily with maximum power
- Definition of acoustic instruments is enhanced thus making their position in a mix much easier to obtain with increased dynamic power.
- Post production recordings can also benefit from the 456HD® process.capacity 500 series racks are readily available.
- Final 2 track Mix Masters should also have the 456 process applied especially if mastering for CD or for uploading to a streaming platform.
- Producers can now use less post recording processes to obtain the desired sounds and the results they are now obtaining could not have been obtained without the use of the 456.

456HD-M DUAL VU METERING

The difference of having two large analogue VU Meters that can be seen from across the studio easily makes a huge difference and within a short time you cannot remember how you got on without them.

These Two Large Analogue VU Meters can be switched to display INPUT or OUTPUT levels using the VU PUSH BUTTON switch.

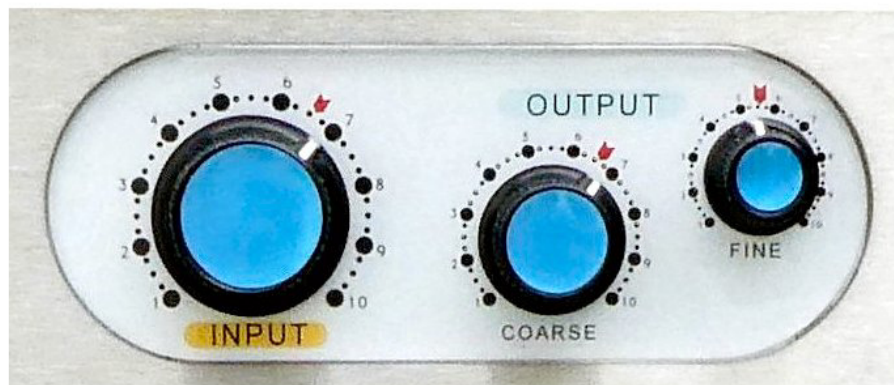
VU Meter Calibration of 0VU can be set from the front panel via a 22 turn preset using a small screwdriver. Standard factory default setting is

0VU = +4dBu.

WARNING: The calibration should not be changed unless you have the necessary laboratory measurement instruments and technical knowledge to do this accurately.

Meter Accuracy The frequency response is from 20Hz – 80KHz +/- 1dB .

Meter Illumination Soft Start The lamp bulbs are driven from a soft start circuit which gradually fades them up to full brightness after 5 seconds. It also allows for a soft turn off and this will greatly increase



INPUT CONTROL

Large 28mm Dia Knobs allow ease of setting the individual level accurately for CH1 and CH2 .

COARSE AND FINE OUTPUT TRIM CONTROLS

21mm Dia Knobs allow ease of setting the INITIAL COARSE TRIM SETTING of the CH1 and CH2 output levels.

FINE TRIM

16mm Dia Knobs set the final FINE TRIM and have a total range of 1.3 dB end to end. Settings can be made very accurately and quickly to enable exact channel balance.

The **CONDUCTIVE PLASTIC** potentiometers we use are specially custom made for the best channel matching possible.

CHANNEL BYPASS

Two individual push button switches control this function with RED LED indication of when the channel is active. Both channel buttons are close together which enables a **one handed two finger operation of both channels** if required. The VU Meters follows this switch mode so level monitoring can be made at the same time. Thus instant quick and intelligent VU monitoring is easily available.



POWER REQUIREMENTS: 100-240VAC 50/60Hz

The 456HD-M utilises a Universal World Power Supply Model GST25A48-P1J manufactured by industry leaders MEANWELL. It is mounted internally in the chassis for easy no soldering quick access. There is no need to make adjustment for any voltage between 100-240VAC 50/60Hz just plug in and go. The full technical specification for this model is available on line. Meanwell Model GST25A48-P1J.

EQUALIZER SECTION



We have carefully crafted our 3 band EQ PARAMETERS to enable real time final tweaking of the overall sound. This equalizing is done before the actual 456HD process.

EQUALIZER SECTION:

The 3 band EQ PARAMETERS operate in tandem for both channels and with the careful matching of the potentiometers track very well to allow for easy and quick STEREO simultaneous changes.

These optimised EQ adjustment ranges were developed in conjunction with leading producers and mastering engineers for recording and mixing applications.

The PRESENCE CONTROL is especially useful for lifting the overall feel and depth of a mix and it's unique property enhances the way in which the 456HD process operates across the mid-frequencies.

When recording the EQ can be used as a valuable tool to obtain the desired analogue sound before the DAW.

The effects of the low frequency head bump and high frequency detail found with change of tape speed and bias variations can also be adjusted in real time making the 456HD process behave just like a Vintage Tape Recorder using Studio Mastering Tape.

TRANSFORMER BALANCED INPUT AND OUTPUTS



Our custom hand wound ferrite wideband transformers are made in house by Roger Mayer and feature exceptional wide band tonal transparency and are superior in performance to electronic balancing circuits. In fact having true balanced transformer inputs and output enables this unit to be inserted in a DAW hard insert without any signal loss. Modern electronically balanced inputs are actually in fact differential inputs and this can cause signal level loss problems from unbalanced sources.

By using both Balanced Input and Transformers an optimal successful interface is obtained in your signal processing chain.

GOLD PLATED NEUTRIK XLR CONNECTORS

These are used for Input and Output connections for reliability.

TRIPLE SHIELDING

The 456HD-M uses our latest triple shielding construction containing a 6 layer PC Card with 2 copper power planes. The internal PC connections are between these shielding layers. The metal box is the 3rd shielding element. This provides very effective shielding against EMI and RF interference from Mobile Phones, Routers and Computers that all are present in modern studios. An integral chassis mounted threaded bushing is provided for a solid wire connection to your rack frame or console 0V, Ground or Earth reference point.



PRIMARY ANALOGUE PROCESSING

Getting the sound right before going into Digital saves an amazing amount of time, money and results in superior sounding tracks. It only makes sense as trying to correct a bad recording in Post Production is an inferior approach in virtually every way. Making great sounding recordings is now possible with our pioneering modern designs and our range of top quality ultimate performance designs bring new game changing techniques to the playing field.

CAPTURING THE INITIAL SOUNDS

All our analogue studio designs use discrete Class A amplifiers in the signal chain to produce the ultimate high frequency response with minimum phase shift. A common misconception is that as human hearing only extends to 20kHz and you cannot hear the difference with extended frequency response. Testing with sine waves does not reveal all as music is a non-repetitive waveform and has very complex harmonic structures that extend to over 100kHz. Cymbals eg: having 40% of their power above 20kHz and defies simple technical explanations. You cannot measure audio quality and fidelity using only tones but you can experience and hear the difference immediately.

Scientific studies have shown that people can experience the presence of the higher harmonics that occur naturally from many different sources. This fact has been recognised since the advent of Hi-Fi audio in the 1950's. It has been described as being as if you were there in the room whilst the recording was being made or that you can hear the air around an instrument. All in all this quality or fidelity of sound is the holy grail and can be heard on the legacy tape recordings that were then mastered to CD from the original master tapes. This premise or fact that great recordings can be made and recorded to a digital format has been my inspiration to only produce the best possible high speed analogue designs that capture the initial microphone signal and to further process it to enable digital recordings of the highest fidelity.

Digital Recording issues with naturally occurring peaks

Naturally occurring peaks from musical instruments and other sound sources you may wish to record often have very large peak values that contain little power.

It is the area under the peak or waveform that determines the power of the signal.

This value is called the RMS value of the signal. A sine wave has about 2dB more power than a triangle waveform of the same peak value at any frequency.

Raw unprocessed analogue sound when recorded digitally will suffer from the loud peaks being the controlling factor to the recording level. Exceeding 0dBFS causes digital distortion which sounds awful and is unlike the forgiving way tape handles these peaks.

A further problem is that the actual RMS power of your track will be low with the main body of the music low in level thus not using the full digital resolution available.

Traditionally tape recording used the magnetic saturation of the tape to control these peaks and smooth the peaks out thus creating a more powerful sound with added harmonics and compression that we have grown to love and accept as being musical sounding.

The recorded signal was louder and more powerful sounding than if you listened live.

Anti-Aliasing Filter:

This is the main culprit to digital recording and some knowledge of how it works will help you engineer your way to good digital recordings.

It basically is a very steep low pass filter that does not pass high frequencies exceeding 20kHz. Text books explanations use sine waves to describe filters in a simplistic but inaccurate attempt for complex waves. Unfortunately sine waves have little in common with real time non asymmetric, non repetitive musical waveforms.

This filter is however necessary for the Analogue to Digital (A to D) Process to work and cannot be eliminated.

This filter's very steep slope is most susceptible to large peaks with fast rise times and the errors created by them makes it mandatory for the analogue input signal to be WAVE SHAPED before the A to D conversion for minimum digital errors and the best sounding digital recording results.

The type of errors caused by the Anti-Aliasing Filter include time smearing, mid level muddy distortion, white noise sounding high end and general lack of dynamics.

The problems may not be apparent especially time smearing and therefore flagged up as an issue when recording but can become a future nightmare for the mix engineer later on when trying to find the correct place in the final 2 track mix for the individual tracks with these types of errors.

Correcting these errors post production is futile as they cannot be put right with algorithmic plug-ins or any other studio technique as once the signal has suffered degradation from this filter there is no going back.

It would be like trying to restore quality to a low quality out of focus image.

TAPE RECORDING AND 456HD® ANALOGUE WAVE SHAPING

Tape recording was the traditional go to method to obtain great sounding digital recordings and the CDs mastered from these legendary recording sessions are considered even today to be the quality benchmark to aspire to.

We can therefore conclude that a CD is capable of producing satisfactory listening results with 16bits and 44.1 KHz sampling rate.

This is why I decided to invent the 456HD® Analogue Wave Shaping Process as a modern solution to the mechanical Tape Recorder. It is modelled on the performance of a Studer A80 using 456 Tape.

Recording with 456 PAP HD® process will result in individual tracks with up to 4-6dB more power without ever exceeding 0dBFS and also retaining the maximum dynamic and phase correlation.

There is no argument that it is easier to mix from sound sources that originated from tape or our 456HD® wave shaping process.

You will obtain optimum digital recording results and save a lot of time and money by initially using 456 PAP HD® Techniques.

This will capture the information correctly at source rather than try and correct badly recorded tracks at a later time during post production.

Mixing time is reduced as each track fits or gels into the mix effortlessly. Small changes in equalisation also work very well and the tracks are very malleable.

The resulting mix will be very loud and powerful without having to heavily further limit the 2 track mix. All this comes to the inevitable conclusion:

“Rewind to the Future ®”

then

“Experience the Difference”

This ultra high speed analogue processing will effectively improve the dynamics both when using it as a pre-recording analogue processor (PAP HD®) before a conventional DAW and also in post playback from the DAW.

Live recording or tracking using multiple instances of the 456HD® are very beneficial for Drum, Vocal and Instruments and in many instances obviate the need for further limiting to control input levels.

What the 456HD® Process brings to the table cannot be duplicated by any digital plug-in and also makes equalisation very easy to use.

It is very quick and easy to use and can be used with conventional DAW setups or the more advanced professional setups that have external converters, analogue mixing and other analogue effects. All levels of digital 0VU calibration protocols are catered for.

We feel confident that using the 456 HD® process moves the goal posts forwards in offering a solution that cannot be obtained by other Digital Plug Ins or combinations of other output effects.

Zero Latency and no extra DAW CPU load plus the ability to multi track in real time recording applications are just some of the advantages.

It continually processes each of the positive and negative peaks independently with zero attack and release time thus maintaining the full audio fidelity of the original signal with desirable analogue recording qualities.

When the 456 has been used in Primary Tracking or Recording the enhanced results obtained with percussive and vocal sounds stand out from the normal and can be easily appreciated.

Cymbals now have more definition and sustain and can easily be combined together to produce spectacular sounding drum tracks that are very easy to place in a mix.

Due to the excellent phase correlation from the drum microphones it is easy to get a huge drum sound with fewer microphones than previously used.

The **PHASING ISSUES** from multiple drum microphones are greatly reduced and improved.

Vocals have less sibilance and spitting and peaks are controlled thus making tracking easier without automatically reaching for an extra analogue limiter.

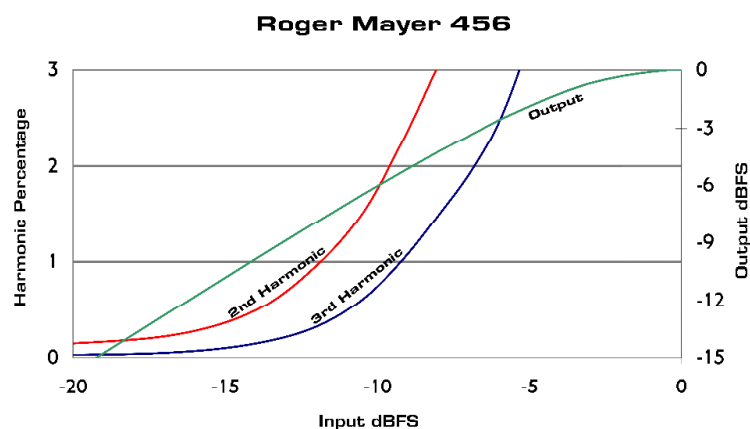
This dynamic process of course also excels when recording acoustic instruments in studio environments as their inherent definition is enhanced thus making a correct position in a mix much easier to obtain.

When tracks have been recorded using the 456 process the mixing time has now proven to be quicker.

The reason for this is that the actual recorded sounds have less undesirable non musical sounding digital recording artefacts and immediately sit better in the mix thus making the mixing process easier and achieving stand out audio quality. This of course is exactly as it was when using multi-track tape.

Producers can now use less post recording processes to obtain the desired sounds and the results they are now obtaining could not have been obtained without the use of the 456 process in the PAP mode.

456 PROCESS INFORMATION



Output Curve:

The green output curve shows the soft knee compression characteristics. As the input increases to **0dBFS** the output increases and is held to a maximum level of **0dBFS**. This corresponds to analogue tape saturation with the peak level no longer increasing.

2nd Harmonic Curve:

The red 2nd harmonic curve shows the increase of harmonic content as the input nears **0dBFS**. As with tape the 2nd order harmonics add warmth and are pleasing to the ear as they possess a direct musical relationship.

3rd Harmonic Curve:

The blue 3rd harmonic curve increases to about 3% when the output is nearly at peak level. This is very similar to what happens when the tape is driven to near peak saturation.

Please note:

The values shown are for peak levels and the actual mean operating levels will be down around the **-15dBFS** where the distortion is low in value. The actual output peak noise level is below **-108dBFS** and the frequency and impulse performance exceed that obtained from analogue tape making it like HD Tape.

DIGITAL SIGNAL OPTIMISATION

Begin with the Default Settings

Set knobs to the default Red Bullets and you will have an approximate unity gain setting when switching the unit IN and OUT of the signal path.

Instead of using 0VU = -16dBFS or some other default level your DAW supports you now have the flexibility with the new 456HD-M model for engineers of changing this setting up to 0VU = -12dBFS knowing that all peaks can now be kept below digital distortion or 0dBFS by the 456HD® wave shaping process.

The **INPUT CONTROL (TAPE IN)** sets the amount of compression and harmonics independently of the OUTPUT just as it would in a Tape Recorder.

The **PRESENCE OR BIAS** control adds High Frequency sparkle as it did with Tape Bias adjustment.

The final overall **OUTPUT LEVEL (TAPE OUT)** is adjusted with the **OUTPUT OR TRIM CONTROLS** without having to use a final Peak Limiter. Monitor this level on your DAW to see how the peaks are controlled by the 456 process

This has obvious advantages in Mastering when colouration is not desired from a Limiter. Peak Level assurance and maximum loudness can be obtained whilst maintaining the overall flavour and fidelity of the mix.

3rd Party Converters used by most professionals support the use of elevated operating calibration levels and the 456HD-M has been expressly designed to operate at maximum efficiency at these levels with state of the art professional configurations. It has been optimised for professional levels and can act just like a Tape Recorder with the various setups and gain structure that were used to drive tape to get that elusive great sound.

The advantages of having peaks controlled with tape compression and harmonics together by the 456 process is a very valuable tool and the easy and flexible setup works well with DAW packages.

USING A LAPTOP WITH THE 456HD-M

The use of a laptop as a Recording Device using only the internal sound card will actually produce surprisingly very good [Audio Performance](#). In the situations where mobility is of importance this option should not be discounted without trying it out for your selves.

ULTIMATE PERFORMANCE USING THE 456HD PROCESS

This can be realised by digitally recording to maximum digital levels. Using the best hardware you can afford. Keep the passes through an A to D converter down to a minimum.

456HD-M AUDIO PATH

The 456HD audio signal path is a completely Class A discrete design with a very high bandwidth. The 3dB point has been set to above 100Khz. The low end response extends to below 10Hz and a small tape head bump is introduced to accurately emulate the classic vintage low end response with tape.

This results in a tape simulation that has the best of both scenarios of tape speed with the low end of using 15IPS and the high end of 30IPS.

Peaks are accurately high speed manipulated with ease and maintain the original phase position in the waveform. This fact can be observed using the latest high speed storage oscilloscope technology.

[Hand Built in the U.K](#) This is a completely discrete analogue design using only selected low noise transistors, low noise metal film 1% resistors, metallised film capacitors from the World's top manufacturers all combined in a design to provided ultimate studio quality audio.

[The Internal Power Supply Rail](#) used from the Universal Power Supply is +48V DC and then is further regulated and smoothed clean to obtain [virtual battery](#) performance with the lowest possible noise under all conditions. This enables ultimate low noise, dynamic performance and channel crosstalk between the two channels.

[Triple Shielded](#) construction is used with a 6 Layer PC Card. Housed with a stainless steel enclosure and fasteners.

[Automotive Quality](#) domed label are used and can be written on and erased easily using a wax pencil thus aiding recall positions.

APPLICATIONS AND SETTING UP

The 456HD-M has analogue inputs and fully balanced transformer outputs that have been optimised to work well with current studio configurations whether they use traditional analogue consoles or a modern DAW setup.

Primary Recording

The 456 has many advantages when used to process the analogue output of a microphone pre-amplifier as it can now control the peak levels effortlessly whilst also adding the desirable tape qualities before the signal is recorded.

The benefits of the 456HD-M Stereo can easily be appreciated when using drums and other difficult percussive sounds in this mode. The benefit of matched channels and the two large VU METERS make stereo recordings very easy.

Multi microphone tracking using several 456HD-M units can be done in real time with no latency or extra CPU Load as when using DAW recorders.

The ability to multi track live using the 456HD-M reduces the work load on the operator as the danger of over recording can now be forgotten once the 456 levels have been initially set. You can enjoy the effect of tape saturation and added harmonics very easily. This method has to be considered as the ultimate way to capture tape qualities at source.

Secondary Processing – Mastering – Mix Busses - Tracks

The 456 is probably most useful in giving tape qualities to existing digital track or mixes and is proving very popular both in mastering and mixing applications. It can be calibrated as you would with a Tape Machine for zero gain.

Set the INPUT and OUTPUT CONTROLS to the RED Bullets. 0 VU level Tone is sent to the INPUT of the 456 and the OUTPUT CONTROLS adjusted for zero gain or 0 VU.

The input and output levels can be monitored with the VU MODE SWITCH

The Presence control is set full anti-clockwise and the Treble and Bass controls set at 12 o'clock.

You now have set a Flat Frequency Response from 20Hz – 100Khz within 0.5dB.

The Tone controls are there to tweak the response but were not designed to work as program equalisers but more for optimising overall mixes and tracks.

If the Treble control is rotated full anti clockwise or to 7 o'clock a small tape head bump curve will be introduced.

The 456 will now act as a Tape Machine with the saturation point being at +9 dB VU or +13 dBu

So if you increase the input you will hear the effect of the Tape Saturation and harmonics and this can be compared to the original using the Bypass switch.

OPERATIONAL ADVANTAGES

The 456 will control and shape each positive or negative peak giving you confidence of never going into digital distortion and safely use the maximum digital range possible to obtain the best resolution and quality.

Without using a 456 you would only be aware of over recording on playback when it could be too late.

Constant VU Meter monitoring can now be forgotten with DAW peak metering too slow to display and track the very fast peaks that give the A to D converters trouble.

You can of course set up the 456HD-M with tone and monitor levels with VU Meters.

This is very easy with our Stereo Model as it has a separate Bypass function on each channel for evaluation and set up.

The 456 Stereo can be set up for zero insertion loss so +4dBm or 0VU is obtained in both Bypass and Operational modes Output and Input adjusted to give zero insertion loss. Manipulation of both the INPUT and OUTPUT enable various offsets to be enabled to give more or less distortion harmonics.

This would be exactly as a Vintage Tape Machine might be setup The 456 Tape saturation point will then be at +13 dBm or +9 VU the same as if actually using tape.

All peaks will be held at these levels and your initial calibration levels can be changed accordingly to take advantage of this.

Instead of using 0 VU = -20 dBFS our mastering engineers are setting up now to 0 VU = -11 dBFS knowing that all peaks are now held below digital distortion or 0 dBFS.

So you can understand that the use of the 456 is unlike any other Digital Software Program and operates with zero latency and any number of them can be used in real time simultaneously thus saving significant Studio Time.

THE DIGITAL RECORDING PROCESS WORK BEST FROM ANALOGUE SOURCES

Old legendary albums from analogue master tape recordings when re-mastered to CD format are considered to sound pleasing to the listener and in many cases set the benchmark to which people aspire to today.

TECHNICAL FEATURES

The 456 extended Low and High frequency response exceeds that of an original Vintage Tape Recorder operating at 15ips or 30ips all of course without any tape hiss producing what is in effect **HD TAPE RECORDING**. The problems of tape recorder setup and cost of multi-track tape can be eliminated as you now have access to all of the desirable analogue properties of the vintage ways but with added high speed dynamics processing.

PRIMARY TRACKING

The 456 can be used after an outboard analogue microphone pre-amplifier and then into the DAW.

This effectively enables the tape compression and harmonics to be added at source and especially makes recording of difficult percussive sounds ie: Drums very easy as all the very fast high frequency peaks are controlled so as not to go into digital distortion.

The optimum recording level is set in seconds by simply turning up the Input Control until audible distortion is heard. This is the maximum tape saturation point being found.

You can now adjust the Digital Recording Level to your operating recording level with the DAW controls or with the Output control in the Stereo Model. The Input control can now be reduced until the right amount of Tape Saturation is found by ear.

*“If it sounds right it is **right**”*

POST PRODUCTION

The 456 can be used as a Hard Insert or for Bus Mixing applications in typical DAW applications to give previously recorded tracks or mixes some added warmth and harmonic content.

Any previously recorded digital tracks can have analogue tape characteristics added as in CD Mastering or for final mixing

Any tracks that are received for mixing by our many producer friends are immediately processed through the 456HD® process before and other work is done to them. This is the 1st step that they do this as a matter of course.

Technical Specifications

Input Level: Nominal -20 dBu to +4 dBu Transformer Balanced

Maximum Input Level: +32 dBu

Input Impedance: 10K or greater

Maximum Output Level: +24 dBu Transformer Balanced

Output Impedance: 50 ohms

Internal Headroom: 20 dB

Dynamic Range: 108 dB

Dimensions: Standard 2U Rack Mounting Size
482mm width x 89mm height x 250mm depth

Weight: 3.64Kg

Power Requirements: 100-240VAC 50/60Hz

www.roger-mayer.co.uk

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