KOMIT™ 500

Compressor

500 Series Module

User Guide

www.radialeng.com

Radial® Komit™ 500 User Guide

Congratulations and thank you for purchasing the Radial Komit 500 module. The Komit is a unique compressor-limiter that is designed to produce effective musical results without the complexity normally associated with dynamic processors. In other words, the Komit is all about getting there quickly whether you are looking for simple clean compression or wish to create dramatic effects.

This manual describes installing and operating your Komit in the Radial Workhorse or other 500 series module power racks. To take full advantage of the unique features that have been incorporated into the Komit, please read through this manual before using it. This will give you a broader sense of its capabilities. If you have questions that are not covered in this manual, please visit the FAQ section on our website. This is where we post answers to questions from users. If you cannot find the answer to your question please feel free to send an email to: info@radialeng.com and we will do our very best to respond as quickly as possible.

The Radial Komit lets you elegantly control with realism or squash it beyond recognition!

⚠️ **WARNING NOTICE TO USER!**

Although preventative safety measures have been designed into Radial 500 series products **we strictly advise against hot-swapping modules** or plugging and unplugging them when the Workhorse or other 500 series rack is powered on. Hot swapping can cause connection sparks at the card-edge connector that could send damaging transients to other equipment. This also greatly reduces the life span of the contacts. Damage due to hot swapping is not covered under warranty. There are no user serviceable parts inside.

FEATURE SET

1. DUAL BALLISTIC LED METER - Divided in half with gain reduction on the left and output on the right. Easy to read and fast, it provides instant visual monitoring of signal status.

2. LIMITER - 12 position dial lets you choose between brick wall limiting, bypass and 'old school diode-bridge clipping limiter' circuit. Ten graduated settings that range from slight clipping to over the top distortion.

3. BW (LIMITER DIAL) - Doubles the compression ratio (1:1; 6:1; 20:1) and bypasses the clipping limiter. Turns the Komit into a set & forget brick wall limiter (at 20:1 compressor setting) for digital recording.

4. FAST / MEDIUM / SLOW - Three speed settings with feed-forward auto-detection make it easy to address the attack and release time constants. Slow for vocals, medium for instruments and fast for percussion.

5. COMPRESSOR RATIO - State of the art VCA FlexKnee™ compression circuit delivers dynamic control from slight to extreme with up to a 10:1 compression ratio. Single RATIO control says it all!

6. SYNC - Lets you control two Komits sharing the same time constant. Set up in a master-slave configuration for optimal stereo dynamic coupling. Sync 'on' turns unit into slave.

7. INPUT - Lets you toggle the input threshold between +4dB and -10dB to optimize signal input range making the Komit easy to interface with all types of program material.

8. GAIN - Used as gain make-up when signals are compressed to set the output level. Variable with up to +22dBu of gain, is also used to drive the limiter for extra character.

9. ON - Bypass switch lets you quickly compare the original pre-compressed signal to the settings you have selected on the Komit. Push in to turn on!

10. LINK - When used with the Workhorse, the stereo link switch lets you combine two Komits together following the same time constant. Also active on standard 500 series racks using the pin-6 card edge terminal.

11. OMNIPORT - Designated as a key input to allow external control over the compressor side chain. Available only when used with the Workhorse.
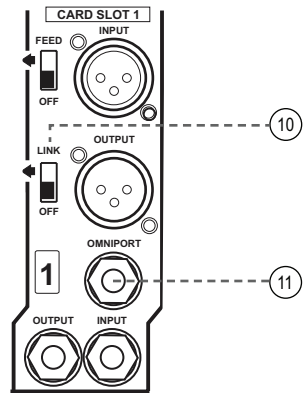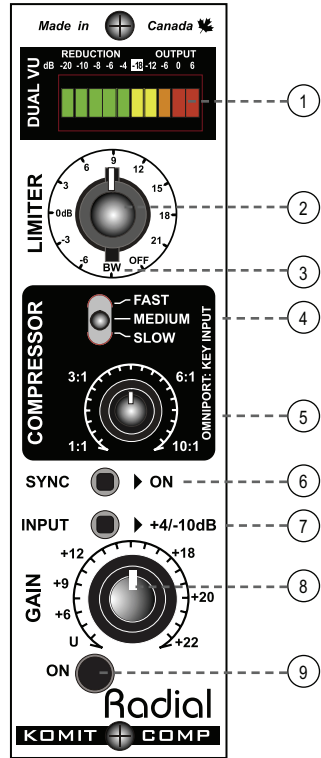

Radial Workhorse
Rear Panel

OVERVIEW

The Radial Komit is a combination compressor-limiter designed for 'one knob' operation. This eliminates the guess work that often makes dynamic processing a challenge. But don't let the diminutive front panel make you think that the Komit is 'limited'… there are tons of features just raring to get used!

The Komit is made up of two major building blocks: the compressor and the limiter. The Flex-Knee™ compression circuit is a voltage controlled amplifier (VCA) while the limiter is a unique clipping circuit designed to simulate the sound created by old school diode bridge inputs from the early days of radio. In between is a gain make-up control that lets you adjust the output to compensate or drive the clipping limiter to create various effects.
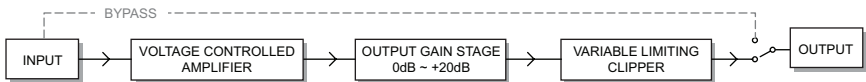

Getting great sounding compression is often described as one of the most difficult challenges in audio. This is attributed to the complex balance involved in setting the input level, threshold, compression ratio, attack time, release and gain make-up. Too much or too little of any one parameter and the track ends up sounding bad. With the Komit, many of these controls have been purposely omitted. Instead, each control has been carefully crafted to achieve great results with a limited amount of fiddling and knob twisting. The following describes compression and how we managed to develop the Komit's 'one-knob' control.

What Is Compression Anyway?

In simple terms, a compressor is an automatic level controlling device. In the early days before compressors, the audio engineer basically had to adjust the volume manually in order to keep the dynamic range under control. Back then, the dynamic range was limited to around 60dB and with big band orchestras generating peaks as high as 100dB, keeping the levels under control was an art to be sure. Compressors changed the way music was recorded by automatically keeping the signal under control. With today's digital technology, we are now able to record with as much as 120dB of dynamic range. But this poses a new problem: when musical passages are low, we turn up the volume to hear the music above the ambient noise. And then when thunder strikes, the resulting transients can be deafening.

Compressors are used to limit the transients by attempting to keep the program material within a given range. For example, the shaded area in the image below depicts the average program level. When the program level exceeds the average (the dashed line depicts the threshold), compression is applied.
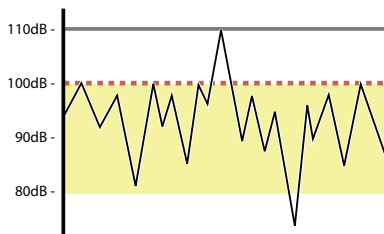
Voltage Controlled Amplifiers

A VCA or voltage controlled amplifier is exactly that… an amplifier whose level is controlled by an external voltage. This control voltage uses what is known as an RMS detector that reads the program material. When a peak arrives that is above the acceptable threshold, the amplifier's output is reduced automatically. The amount of reduction is set by the engineer using the compression ratio. The ratio can be set for slight compression to extreme whereby with every decibel (dB) that comes in, only a certain percentage will be allowed to pass.

SLIGHT	MODERATE	SIGNIFICANT	HEAVY	BRICK WALL
1.2 : 1	2 : 1	5 : 1	10 : 1	20 : 1
1.2dB in : 1dB out	2dB in : 1dB out	5dB in :1dB out	10dB in : 1dB out	20dB in :1dB out
83% allowed to pass	50% allowed to pass	20% allowed to pass	10% allowed to pass	4% allowed to pass

Using the example above, if the ratio is set at 2:1 and there is a 10dB peak, the VCA will only allow 5dB to pass. When the compression ratio is pushed above 10:1, the compressor is generally considered to be a limiter. When the ratio is above 20:1 it is often referred to as a 'brick wall'. In this case, for every 10dB that is applied, barely ½ dB will pass. A brick wall limiter is used to keep the signal out of the red. As a rule, the less compression you apply, the more natural the program material will sound.
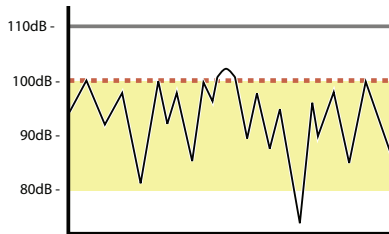
Controlling The VCA

The Komit's VCA employs what is known as a feed-forward detection circuit. In other words, it looks at the incoming signal before it arrives and adjusts itself accordingly to control the peak. When it 'sees' a peak that exceeds the threshold (dashed line), depending on how the compression ratio has been set, the VCA will reduce the output to compensate.
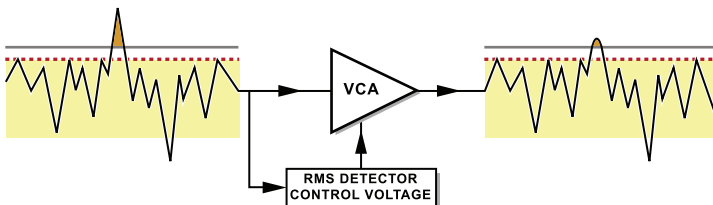
The control is processed outside the VCA using a circuit known as the side chain. The side chain itself is governed by what are called time constants. These determine how quickly the VCA circuit will react. This involves carefully setting the attack and release times. When adjusting the time constant, you are basically telling the compressor how quickly it should react to the peak (attack time) and how quickly things should revert back to normal (release time).
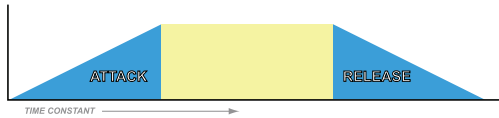
If set too quickly, it make an audible click. If set too slow it can squash the dynamics to a point where the track sounds lifeless. One typically sets the 'conditions' by adjusting a variety of knobs such as gain, threshold, compression ratio, attack, release and so on. Trying to get the combination to sound right is difficult. This is precisely why the Komit is equipped with three speed settings and a single control knob. The Komit makes it easy to set the time constant based on the type of material that you are compressing and achieve great results quickly.
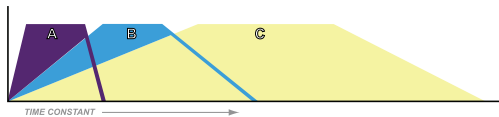
For ultra quick transients like percussion, a fast setting (A) is used. This sets the compressor to react very quickly to high-hats, tambourine, wood block or even a snappy snare. For instruments like guitar and bass a smoother time constant is generally used. The medium (B) setting avoids the abrupt turn-on transient and lets the note decay more naturally. And for voice or maybe a string section, the slower (C) setting may be preferred.

The FlexKnee™ Compression Curve
For the most part, there are two fundamental compression curves known as hard knee and soft knee. These are often confused with the attack time. The knee is the pivot point where compression begins. Hard knee compression abruptly affects transients above the threshold while soft knee sets in before the threshold and does so in a smoother fashion. Most engineers feel that soft knee sounds more musical.
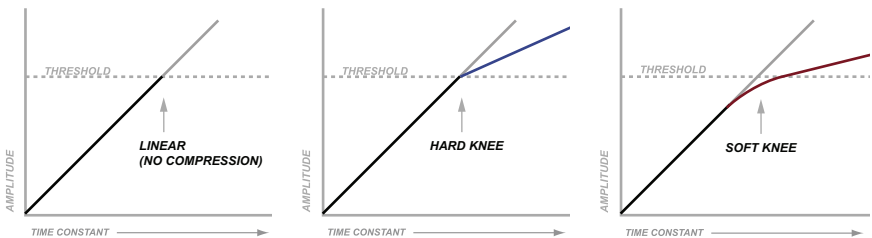
And as previously mentioned, lower compression ratios tend to sound more natural but may not prove to provide adequate control over peak transients. On the other hand higher compression ratios provide the needed control, but tend to introduce artifacts or squash all of the natural dynamics.

With the Komit, a scaled approach we call FlexKnee™ is employed that dynamically adjusts itself based on the incoming program material. At lower levels the compression ratio automatically decreases for a more natural rendering but as peaks are encountered, the compression curve changes, simultaneously lowering the threshold and increasing the compression ratio at the pivot point. As this happens, a larger portion of the signal's dynamic range becomes compressed all the while, automatically adjusting the output to that it stays within the predetermined range.
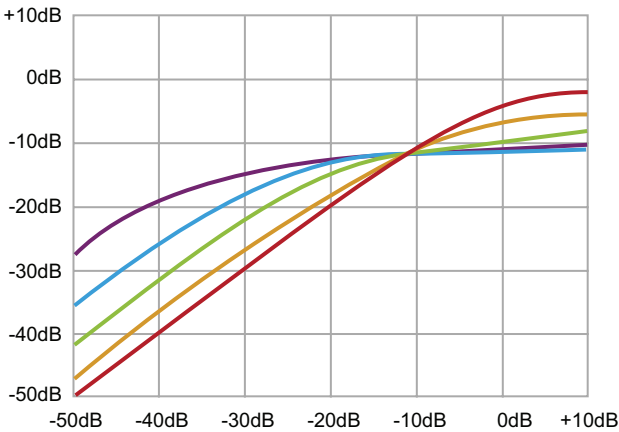
FLEXKNEE™ DYNAMIC COMPRESSION CURVES

Simply set the input level to the desired program range between -10dB and +4dB and set the compressor to the desired ratio. Should sibilance or pumping become audible, simply back off the compression. If more output is needed, adjust the make-up gain to suit. It truly is that easy!

Good And Bad Limitations!
In general terms, a limiter is basically a compressor that is set at a higher ratio. And although there is no set standard, one usually refers to limiters when the compression ratio is set above 10:1. Some compressors like the Komit employ VCAs while others employ opto-couplers (photocells), FETs (field effect transistors) or even go as far as using light bulbs to work their magic. These are available in various tube or solid state circuit permutations that together give them a particular sound. Because each type of compressor-limiter will introduce a sonic signature, engineers will select one or another depending on preference. The Komit's 12 position limiter control has been set up to work two ways: Either as a clipping limiter or as a super clean brick wall limiter.

Diode Bridge Clipping Limiter
Back in the early days of radio, diode bridge circuits were used as a means to limit the signal in a classic communication receiver. These 'nasty' sounding circuits would 'clip' the peaks in the truest sense of the word. Only with the Komit, you decide when the onset of clipping will occur.

NO CLIPPING   MODERATE CLIPPING   HARD CLIPPING
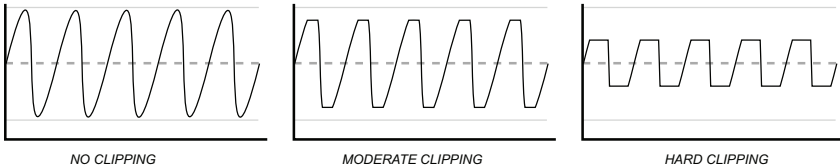
The Komit simulates the effect with 10 presets for quick, repeatable set ups. These are scaled from slight clipping to down-right nasty. Think in terms of Nine Inch Nails and you will get the picture. Adjusting the amount of clipping is merely a matter of selecting one of the 10 presets and then using the drive gain to decide how hard you want to hit the Clipper circuit.

Brick Wall Control
Although the aggressive effect of radical diode bridge limiting can be fun, there is often a need for clean high-ratio compression or brick wall limiting. This application is simple: keep the signal out of the red. This time, we want to do it with minimal artifact. When the Komit's LIMITER control is set to BW, it bypasses the diode bridge circuit and doubles the compression ratio. When the COMPRESSION ratio control is set fully clockwise it can reach a ratio of 20:1 compression which means that for every dB that is applied, you are only allowing 4% of the signal to pass.
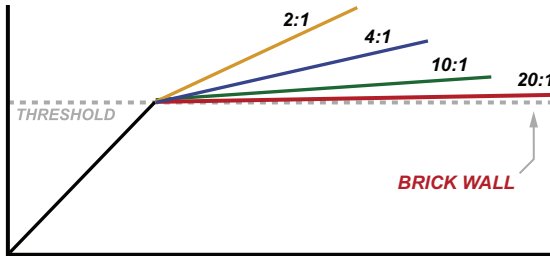
As you can see, the Komit's amazing feature set delivers everything from simple compression, to brick wall limiting to interesting effects created by the Clipper. Once you begin using the Komit and hear how these seamlessly interact, you will be amazed at what sounds you can create.

GETTING STARTED

Before making any connections, start by turning off your audio system and turning all volumes levels down. This helps protect equipment from turn-on transients that could damage loudspeakers and other sensitive equipment. We recommend using a power bar with an on-off switch as this makes it easy to turn on and off the 500 series rack, monitors and so on, using a single switch. Carefully plug the Komit into your 500 series rack to avoid stress on the card edge connector. Screw the module in to ensure it does not accidentally get dislodged.

All connections to the Komit are done on the rear panel. Most 500 series racks are equipped with XLR connectors. When you plug the Komit into your 500 series rack, it will automatically route the input and output to the module. With the Workhorse, this is augmented with ¼" TRS connectors, D-Subs and a signal to feed the Workhorse mixer. It also activates the Omniport which in this instance (with Komit) turns the Omniport into an external key input.

Start with these settings:
1. Limiter: set to OFF (bypass)
2. Speed: set to MEDIUM
3. Compressor Ratio: set fully counter-clockwise to 1:1
4. Sync: set to outward position
5. Input +4/-10dB: set to outward position (+4dB)
6. Gain: fully counter-clockwise (unity gain)

Connect the audio input using the rear panel XLR on your 500 series rack. If you have a Workhorse, you can also use the ¼" input or D-sub. Although the Komit is designed for a professional +4dB balanced signal, unbalanced signals will also work. Simply depress the +4dB/-10dB input to adjust the threshold. The Komit is equipped with a direct audio output to feed the rear panel XLR plus a buffered output to feed the Workhorse internal mix buss. We suggest you start by using the Komit on its own so that you familiarize yourself with the functions before creating more elaborate set-ups.

500 SERIES RACK · *WORKHORSE RACK XLR I/O* · *WORKHORSE RACK TRS I/O*
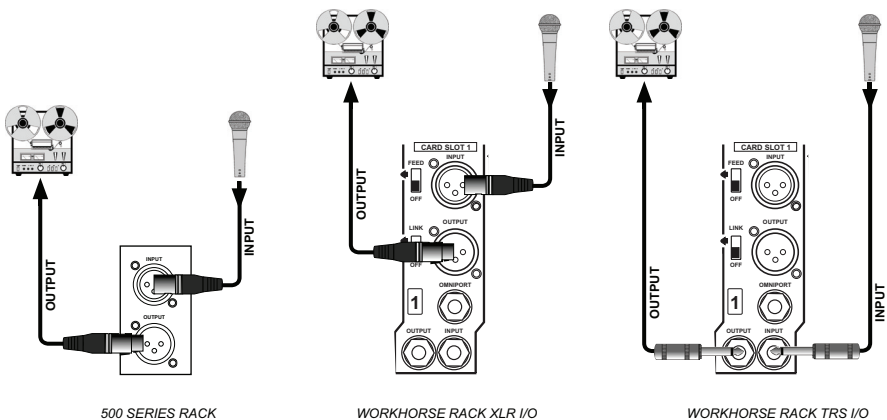
USING THE COMPRESSOR

The Komit employs a VCA compressor with feed-forward signal detection. In other words, the Komit will read the input signal level and the FlexKnee circuit will react accordingly. Furthermore, unlike other compressors, you do not have to set individual attack or release times: you simply set the 3 position time constant switch to slow, medium or fast based on the type of signal you are compressing and then adjust the compression ratio to suit. Although there are no hard set rules, the slower setting tends to be used on vocal tracks for smoother effect while the medium setting tends to be used on instruments. For dynamic control over percussive instruments, the fast setting of course is typically used.

Activate the Komit by depressing the ON bypass switch (pushed in) so that the signal passes through the Komit. Play a source track and start experimenting. Drum tracks are a great source for experimenting as they let you clearly hear the compression effects as it is applied to the transients. Start with the compression control set fully counter-clockwise to the 1:1 setting. This means that when 1dB is sent in, 1dB comes out. As you increase the compression to 2:1, this basically means that for every 2dB that you send in, only 1dB will be produced or 50% of the signal will be allowed to pass. One can increase the compression to 10:1 where the signal will be completely squashed. You will find that with compression, less tends to sound more realistic.

Setting The Input Level
You will notice the absence of an independent threshold control on the Komit. Normally, one sets the threshold or the point where compression begins using this control. With the Komit, this has been replaced with a simple 2 position switch labeled "+4/-10dB". The idea is simple: since the Komit will be receiving the input signal from a recorder or mic preamplifier, the signal will almost always be either +4dB professional line level or -10dB from an unbalanced source. If extra 'reach' is required, you simply depress the input to increase the sensitivity. So instead of squashing down the input signal using the compressor, you simply set the level based on the overall program. This makes it easy and of course simplifies the front panel layout. Once you have set the compression ratio, you can increase the GAIN control. The gain control is post-compressor, pre-limiter and is equipped with automatic gain make-up to deliver more natural sounding dynamics. As most of the work is done automatically, the +4/-10dB input selector provides the input reference and sets the threshold for optimal performance.

Setting The Output Gain
The Komit's output GAIN control serves two purposes. It is used to make up the gain after the compressor is introduced into the circuit. Keep in mind that as you reduce the dynamic range by squashing the peaks, the relative loudness will be reduced. The output control lets you bring up the overall level to compensate. The variable control will deliver up to +22dB of gain! As a rule, start by setting the control to unity (U) and then adjust as needed. This brings to mind the second application: using the output to overdrive the Clipper. In broad terms, you can think of this like the preamp stage of a guitar amp while the Clipper (limiter) acts like the master volume.

The 10 Segment Meter
The Komit is equipped with a 10 segment meter that is split in two. The left side moves from center to left and displays gain reduction while the right side moves from the center to the right to show the output level. The meter is designed to give you a reference point and help you keep signals working within normal range.

USING THE LIMITER

The Komit's limiter is in fact a Jekyll & Hyde arrangement. At one end it can be used as a super clean brick wall limiter, and at the other end, it turns on the Clipper™. This is a clipping effect that simulates the effect of overloading a diode bridge input circuit. The effect can range from subtle to extreme and is predicated by the 12 position LIMITER rotary switch.
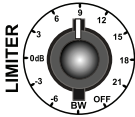
Position BW:	Sets the compressor circuit to brick-wall limiting and bypasses the Clipper™ circuit.
Position OFF:	This bypasses Clipper™ circuit.
Positions -6~21:	Gradually increases the threshold of the Clipper™.

The Brick Wall Limiter
When the BW (brick wall) setting is selected and the compressor control turned fully clockwise, the Komit acts as a super clean limiter. The Clipper™ circuit is bypassed and the compressors ratio control doubles by a factor of two (x2) changing the maximum compression ratio from 10:1 to 20:1. In other words, for every 20dB sent in, only 1dB (4%) will be allowed to pass. This setting is ideally suited for digital recording where you absolutely want to keep the signal out of the red.

Limiter 'Off' Mode
When the limiter is set to OFF, the Komit bypasses the Clipper™ circuit, leaving you with 100% VCA compression control over the signal. It is important to note that the Komit's VCA compression circuit is basically always on. You can turn it off using the bypass switch or dial out the compression by tuning the ratio dial to the 1:1 position - fully counterclockwise.

The Clipper™
The Komit's Clipper is designed to simulate the effect of overloading a diode bridge input circuit. This type of circuit was used in vintage radio receivers. Although not a limiter in the usual sense of the word, the way this works is by limiting the gain in somewhat the same way as one 'unnaturally' limits the output of a device when pushed beyond its normal operating range. At one point, instead of getting louder, it basically distorts. The term of course is clipping, hence the name Clipper™.

The LIMITER control has 10 positions for the Clipper™ labeled in decibels for the threshold of clipping. When the level exceeds the threshold the waveform is clipped. From +9dB to +21dB the Clipper quietly controls peaks and adds pleasing overtones reminiscent of vintage devices. From +6dB to -0dB the Clipper changes character from nice and dirty to down right ugly. And when set to the extreme, -3dB to -6dB, think Nine Inch Nails. The Clipper adds character to bass, crush to kick drum and edge to vocals.

To hear the clipping effect, first set the compressor control to 1:1 and the GAIN to U or unity gain. Hit play. Rotate the 12 position LIMITER dial counterclockwise until you clearly hear the effect. Now increase the GAIN control and listen to the effect. The more signal you drive the Clipper™ with the more distortion it will produce. As you get to know the Komit, you will find that using the Clipper™ in a subtle way can increase the presence of a vocal track or add sizzle to a snare drum. By combining the compressor section with the Clipper™, you can unleash all kinds of new and exciting sounds that will surely please some and completely unnerve others. Not very nice but certainly loads of fun!

SOME PRACTICAL EXAMPLES

Bass Guitar
Bass guitars tend to sound better when some compression is applied. Start by setting the compression ratio to 5:1 and time constant to medium speed. Then, depending on the dynamics try adjusting the ratio to suit. As you increase the compression, adjust the output to compensate.

Vocals
Setting a compressor for voice tends to be a bit trickier as some vocalists will drift all over the place while others have tremendous control over their instrument. As you increase the compression to compensate, the track can lose its dynamic appeal. Start with less compression - say 3:1 - as this will sound more natural.

Kick Drum
Compressing the kick is usually done to even out the drummer's performance. Like a voice, some drummers are exceptionally consistent while others are not. Start by setting the compression ration to about 3:1 using the fast time constant. If you want to create a more 'in your face' effect, increase the ratio to 6:1 or more.

Acoustic Guitar
Acoustic guitars tend to sound 'poppy' unless compressed. A popular approach is to position a condenser mic about 6" away pointing between the neck and sound hole. Start with the compression ratio set to 3:1 with a medium time constant. This will eliminate the peaks without totally eliminating the dynamics. Adjust to suit.

Piano
Of all instruments, the piano has the widest frequency response and because it is very dynamic, one must be careful when applying compression. For solo performances, less works best such as setting a 1.5:1 ratio as this will tame the peaks without hampering the dynamics. When mixing the piano in an orchestrated track, a higher compression ratio would be used.

Using The Komit In Stereo
In the past, the traditional way to link two compressors has been to share the control voltage between two devices. The problem with this approach is the accuracy of the attack and release characteristics are limited due to part tolerances and voltage tracking lag time. To overcome the problem, the Komit employs an innovative 'sync' function that allows both compressors to share the same time constant. The result is a more accurate stereo rendering.

Setting up the Komit for stereo use is easy: 500 series racks are equipped with an internal buss connection (pin-6) that is designed to couple two modules together in stereo. Depending on the brand, the 'tie-together' is done by soldering a connection or moving a bridge junction. On the Workhorse, this has been simplified with a LINK switch on the rear panel that is merely moved to the up position for stereo modules. The Komit's front panel SYNC switch is then used to determine which of the two modules will act as master (outward position) and which will act as the slave (inward position). Once set in stereo, each Komit retains a certain degree of independence. In other words, although the time constant will be coupled, each side of the stereo signal will retain independent compression control, albeit, the loudest transient will ultimately determine the FlexKnee pivot point.

Using The Key Input (Omniport On Workhorse)

If you have a Workhorse, you can also control the Komit's dynamics from an external device by connecting it to the Omniport - which in this case is set as a key input or side-chain. So instead of the Komit reacting to the program input signal, it will compress the signal following an outside source. This can be used in a variety of ways:
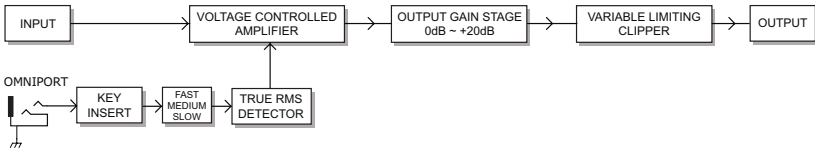

EXTERNAL CONTROL WHERE DETECTOR IS FED A SIGNAL FROM THE OMNIPORT INPUT

Amplitude Dependent Compression Or Ducking

Ducking is a term that refers to automatically reducing the level of one track when another is played. This is commonly used in video for dialogue replacement whereby when the orator speaks, the background music will automatically be shunted. You can also use ducking in music production. For instance you can automatically reduce the level of a rhythm guitar when the vocalist is singing. As soon as she stops, the guitar will automatically be brought back up to the previous level.

To create these effects, simply take the vocal track output from your recorder or mic preamp and send it into the key input via the Omniport. Set the compressor to a relatively high setting like 5:1 and adjust the input level from the vocal track. Adjust to suit.
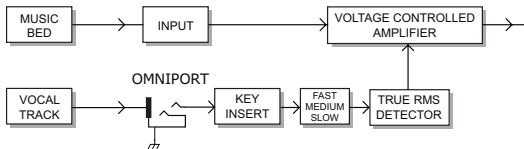
Another use for ducking is using the kick drum as the key to pull down the stereo track. This is popular with dance music and is used to accent the kick drum by automatically reducing the loudness of all the other tracks. To create this effect, set the Komit with fairly high compression and when the kick drum signal hits the Komit, the program will be reduced accordingly.

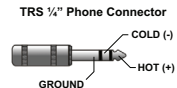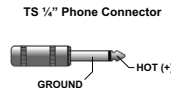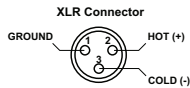## Frequency Dependent Compression Or De-essing

Another popular application with a compressor is known as de-essing or controlling the sibilance of a vocal track that may have excessive 'S' sounds. To set this up, send the vocal track into an equalizer. The EQ will be used to accentuate the 'S' problem. The output from the EQ will then be sent to the Komit's key input. When excessive S frequencies are encountered, the Komit will pull down the track automatically smoothing out the track.
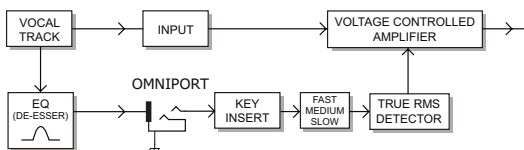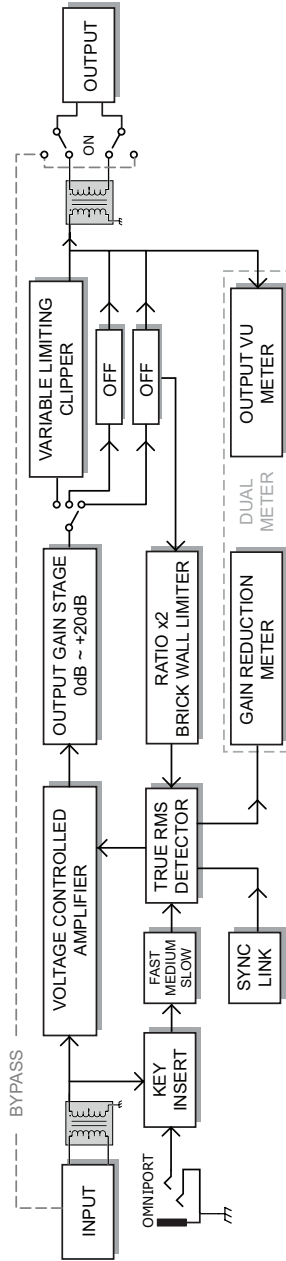
RADIAL KOMIT 500 SPECIFICATIONS*

Circuit Type:	Feed Forward with True RMS Sidechain.
Clip Level - Output:	+22dbu
Compression Ratio:	1:1 to 10:1 Depending on input level and compressor control setting.
Brick Wall Mode:	1:1 to 25:1 Depending on input level and compressor control setting.
Frequency Response:	Flat with -2db drop at 20Hz
Maximum Gain:	+20db Compressor set to minimum and Output Control set to 10
Input Impedance:	9650 Ohms (9500 ohms resistive and 150 ohms inductive)
Intermodulation Distortion;	0.112% @ 80Hz/3kHz (+10dB in and -12dB out; Compressor 1:1; Output gain 1:1)
Limiter (Clipper™):	+4dBu to +21dBu, Variable level classic communications receiver clipper circuit.
Omniport Function:	Key input to detector
Output Impedance:	140 Ohms
Output Level:	Up to +22dBu
Power Requirement:	72mA
THD+N:	0.025% @ 1 kHz. (+10db in; 25:1 Brick Wall setting; Output gain 1:1) 0.023% @ 1 kHz. (0db in and out; Compressor and Output gain controls at 0)
Threshold:	-10dbu or +4dbu
Warranty:	3 Years
Size:	Standard 500 Series format
Weight:	1.5 lbs. (0.7 kg)
Compliance API:	Yes (VPR Alliance)
Compliance WHOS-Doc:	Yes (Radial Workhorse 500 Rack)

CONNECTOR WIRING

BLOCK DIAGRAM

INPUT

OMNIPORT

BYPASS

KEY INSERT

VOLTAGE CONTROLLED AMPLIFIER

FAST MEDIUM SLOW

SYNC LINK

TRUE RMS DETECTOR

OUTPUT GAIN STAGE
0dB ~ +20dB

RATIO x2
BRICK WALL LIMITER

GAIN REDUCTION METER

VARIABLE LIMITING CLIPPER

OFF

OFF

DUAL METER

OUTPUT VU METER

ON

OUTPUT

THREE YEAR TRANSFERABLE LIMITED WARRANTY

RADIAL ENGINEERING LTD. ("Radial") warrants this product to be free from defects in material and workmanship and will remedy any such defects free of charge according to the terms of this warranty. Radial will repair or replace (at its option) any defective component(s) of this product (excluding finish and wear and tear on components under normal use) for a period of three (3) years from the original date of purchase. In the event that a particular product is no longer available, Radial reserves the right to replace the product with a similar product of equal or greater value. In the unlikely event that a defect is uncovered, please call 604-942-1001 or email service@radialeng.com to obtain an RA number (Return Authorization number) before the 3 year warranty period expires. The product must be returned prepaid in the original shipping container (or equivalent) to Radial or to an authorized Radial repair center and you must assume the risk of loss or damage. A copy of the original invoice showing date of purchase and the dealer name must accompany any request for work to be performed under this limited and transferable warranty. This warranty shall not apply if the product has been damaged due to abuse, misuse, misapplication, accident or as a result of service or modification by any other than an authorized Radial repair center.

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⚠ This product is intended for professional use only. The user should be familiar and experienced with the 500 series rack and module format.

True to the Music

Radial Engineering Ltd.
1588 Kebet Way, Port Coquitlam, British Columbia, V3C 5M5
tel: 604-942-1001 • fax: 604-942-1010 • email: info@radialeng.com

www.radialeng.com