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You can read the recommendations in the user guide, the technical guide or the installation guide for BEHRINGER PRO-XL MDX1600. You'll find the answers to all your questions on the BEHRINGER PRO-XL MDX1600 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual BEHRINGER PRO-XL MDX1600**  
**User guide BEHRINGER PRO-XL MDX1600**  
**Operating instructions BEHRINGER PRO-XL MDX1600**  
**Instructions for use BEHRINGER PRO-XL MDX1600**  
**Instruction manual BEHRINGER PRO-XL MDX1600**

AUTOCOM® PRO-XL MDX1600 / COMPOSER® PRO-XL MDX2600 / MULTICOM® PRO-XL MDX4600

## User's Manual

ENGLISH

Version 1.1 June 2002



AUTOCOM PRO-XL MDX1600



COMPOSER PRO-XL MDX2600



MULTICOM PRO-XL MDX4600



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**Manual abstract:**

g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, near a swimming pool etc.). **Ventilation:** The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be placed on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings. **Heat:** The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat. **Power Source:** The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance. **Grounding or Polarization:** This device must be grounded. **Power-Cord Protection:** Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, extension cords and the point where they exit from the appliance. **Cleaning:** The appliance should be cleaned only as recommended by the manufacturer.

**Non-use Periods:** The power cord of the appliance should be unplugged from the outlet when left unused for extended periods of time. **Debris and Liquid Entry:** Care should be taken that debris and/or liquids do not enter the enclosure through openings. **Damage Requiring Service:** The appliance should be serviced by qualified service personnel when: s s s s The power supply cord or the plug has been damaged; or Debris or liquid has entered the appliance; or The appliance has been exposed to rain; or The appliance does not appear to operate normally or exhibits a noticeable change in performance; or The appliance has been dropped, or the enclosure damaged. **WARNING:** To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure voltage that may be sufficient to constitute a risk of shock.

This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

**Servicing:** The user should not attempt to service the appliance beyond that which is described in the operating instructions. All other servicing should be referred to qualified service personnel. 2 AUTOCOM PRO-XL MDX1600/COMPOSER PRO-XL MDX2600/MULTICOM PRO-XL MDX4600 FOREWORD

Dear Customer, welcome to the team of BEHRINGER users and thank you very much for expressing your confidence in us by purchasing this unit.

It is one of my most pleasant tasks to write this letter to you, because it is the culmination of many months of hard work delivered by our engineering team to reach a very ambitious goal: Shaping a new generation of dynamic processors that suit all possible demands of dynamic processing be it in the studio or under the most demanding live conditions. The COMPOSER PRO, the AUTOCOM PRO and the MULTICOM PRO have for quite a long time been standard tools used by numerous studios and PA rental companies. The task to improve some of our best-selling products certainly meant a great deal of responsibility, which we assumed by focusing on you, the discerning user and musician. It also meant a lot of work and night shifts to accomplish this goal. But it was fun, too. Developing products usually brings a lot of people together, and what a great feeling it is when everybody who participated in such a project can be proud of what we've achieved. It is our philosophy to share our joy with you, because you are the most important member of the BEHRINGER family. With your highly competent suggestions for new products you've greatly contributed to shaping our company and making it successful. In return, we guarantee you uncompromising quality (manufactured under ISO9000 certified management system) as well as excellent technical and audio properties at an extremely competitive price. All of this will enable you to fully unfold your creativity without being hampered by budget constraints.

We are often asked how we can produce such high-grade devices at such unbelievably low prices. The answer is quite simple: it's you, our customers! Many satisfied customers mean large sales volumes enabling us to get better conditions of purchase for components etc. Isn't it only fair to pass these benefits back to you? Because we know that your success is our success, too! I would like to thank all people whose help on the projects COMPOSER PRO-XL, AUTOCOM PRO-XL and MULTICOM PRO-XL has made it all possible. Everybody has made very personal contributions, starting from the designers of the unit to the many staff members in my company to you, the user of BEHRINGER products. TABLE OF CONTENTS 1. INTRODUCTION .....

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..... 12 1. INTRODUCTION With this new dynamics processor from the PRO-XL series you have acquired an extremely powerful and universal compressor which unites in one compact device all of those dynamics control functions that are most frequently used in practice: each channel has an independent compressor/limiter, expander/gate and peak limiter. Thus, virtually all dynamics processing problems can be remedied with little effort. Future-oriented BEHRINGER technology The new PRO-XL dynamics processors from BEHRINGER feature several innovative circuit designs, making them topclass dynamics processing equipment. Compared to their predecessors, they now have improvements such as the de-esser, which allows you to effectively suppress disturbing hiss noise (COMPOSER PRO-XL), additional LED displays to set the de-esser levels, plus a switchable enhancer.

The AUTOCOM PRO-XL not only includes an enhancer, but also a switchable de-esser and a peak limiter, which has already proved its versatility in the COMPOSER PRO. The BEHRINGER MULTICOM PRO-XL has been upgraded with an expander/noise gate plus enhancer. Additionally, we have managed to improve its audio properties even further in combination with a revised circuit design. To give you the best operational reliability possible, we manufacture our products in accordance with the highest quality standards known in the industry.



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Additionally the dynamic processors are manufactured under ISO9000 certified management system.

My friends, its been worth the trouble! Thank you very much, Uli Behringer 1. INTRODUCTION 3 AUTOCOM PRO-XL MDX1600/COMPOSER PRO-XL MDX2600/MULTICOM PRO-XL MDX4600 VAD (Voice-Adaptive) De-esser The COMPOSER PRO-XL and AUTOCOM PRO-XL incorporate a newly designed de-esser circuit specifically adapted to process the critical range of treble frequencies. Hiss noise on vocal tracks often contains high levels, giving the signals a rather edgy, unpleasant sound. The de-esser responds to those frequency ranges in which hiss noise usually occurs and limits the overall signal level as soon as the audio signal is affected by excessive energy density in this range. Unlike equalizers, however, it does not impair the frequency response of the signal.

In this way, intelligibility in low-level passages is perfectly preserved, and you can even boost the treble range with a good equalizer. The sound becomes transparent and fresh, while the de-esser prevents hiss noise from becoming too dominant and disturbing the overall sound image. IDE (Interactive Dynamic)

Enhancer Probably the best known negative side effect of a compressor is the dull and compressed sound that is likely to result from the processing of complex program material. Low-frequency instruments usually produce the highest signal energy and hence make the compressor reduce the overall level.

Any instrument in the higher frequency ranges concurrently played also has its level reduced, which leads to a compressed overall sound. The dynamic enhancer provides the solution to this problem, enabling you to make up specifically for the compression-induced loss of treble energy. Since the enhancer can detect the amount of compression applied, it does not change the sound image as long as the signals remain uncompressed. No treble energy is lost, even when complex mix-down material is processed. ATS (Authentic Tube Simulation) circuitry Even today, the warm, expressive and transparent tonal character of electronic tubes is a real classic. We proudly present the COMPOSER PRO-XL and its high-tech circuit design enabling the authentic reproduction of this legendary sound, and at the same time avoiding all of the technical drawbacks that go along with tube technology.

Owing to state-of-the-art semi-conductor technology, there is no sound deterioration caused by tube ageing, there are no heat problems and no maintenance required at all. All that remains is the advantage of tube technology: its distinctive sound! IKA (Interactive Knee Adaptation) Compressor Our proven IKA (Interactive Knee Adaptation) circuit successfully combines the hard knee compressor concept with the soft knee characteristic. This program-dependent control characteristic makes it possible to both provide an inaudible and musical program compression and allows for creative and efficient dynamics processing. IRC (Interactive Ratio Control) Expander A fundamental problem when using a compressor is the fact that the basic noise floor depends on the amount of compression applied, i.e. it is amplified maximally in low-level passages and breaks in the music (compressor noise). To eliminate this problem, compressors are usually equipped with additional expander or gate circuitry, simply fading out the noise during breaks. The dynamics processors from the PRO-XL Series feature our IRC (Interactive Ratio Control) expander, whose ratio setting changes automatically with the program material. The result is an expander that can be set quickly and easily, and does not cut off low-level wanted signals (e.g.

the first or last syllable of a word in a vocal track). With the new IRC circuit, at the time of purchase, so as to benefit from our extended warranty. The serial number is printed on the top side of the unit. Or register online at [www.behringer.com](http://www.behringer.com).

com. 1.2 The users manual This manual has been designed to give you a survey of all control elements and at the same time provide you with detailed information on how to use them. To help you understand what each control does, we have grouped the control elements according to function. If you need more detailed information on specific topics, please visit our website at [www.behringer.com](http://www.behringer.com),

where you will find for example explanations of in-detail dynamics applications. Fig. 2.2: Expander/gate section control elements Use the TRIGGER control in the expander/gate section to determine the threshold below which expansion sets in, so that signals below threshold are reduced in gain. The setting range is from OFF to +10 dB. If a signal below the adjusted value is applied, the red LED (expansion on) lights up. If the signal gain is above the adjusted value, the green LED lights up. In order to adapt the expander/gate optimally to the program material, use the RELEASE switch to select a short or long release time. Percussive material with little or no reverb at all is usually processed with a short release time (switch not pressed).

The long release time is the best choice for slowly decaying or heavily reverberated signals (switch pressed). The GATE switch allows you to toggle between the expander (switch not pressed) and the gate function (switch pressed). Use the gate function to mute signals below threshold (e.g. noise). Application hints

The purpose of using an expander is usually to expand the usable dynamics towards the lower end, i.e. to improve the separation between low-level signals and the unavoidable noise floor by reducing the noise level. Start setting up the expander by turning the TRIGGER control from position OFF clockwise until the LEDs show the onset of the gain reduction. Preferably, you should use some music material containing pauses and soft passages, so as to hear whether the beginnings or endings of words are cut off by the expander or are suppressed too much.

If necessary, experiment with the release time or reduce the threshold a little bit. 2. CONTROL ELEMENTS AND CONNECTORS This chapter describes the various control elements of your dynamics processor. All controls are explained in full detail, including useful suggestions on how to use them. The COMPOSER PRO-XL and AUTOCOM PRO-XL feature two identical channels, the MULTICOM PRO-XL four of them.

Fig. 2.1: Linking channels with the COUPLE switch Pressing the COUPLE switch links the channels. In couple mode, dynamics are controlled by using channel 1 switches and controls, whereby the control signal is derived from the energy of both side chain channels (true stereo processing). Therefore, all switches and controls of channel 2 (except for IN/OUT, SC EXT, SC MON, LO CONTOUR, TUBE, DE-ESSER, MALE, ENHANCER, I/O METER switches and OUTPUT, DE-ESSER LEVEL and ENHANCER LEVEL controls) will be disabled when you activate the COUPLE switch.

On the MDX4600, channel 3 controls channel 4 in link mode. Gates work basically in the same way, the major difference being the fact that they reduce gain to a much greater extent. Once the level drops below threshold, the signal is muted completely.



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The classic application of a gate is the separation of signals delivered by multiple microphones in a multitrack recording. Especially when drums are recorded, a gate is almost indispensable to avoid crosstalk, e.g. of the cymbals into the floor tom microphones. However, you should always try to use the microphones and their directivity in the first place to achieve some degree of channel separation and hence a better and more natural result. Subsequently, a gate helps you optimize your set-up. The program-dependent IRC allows you to set both gate and expander easily and conveniently.

Nevertheless, you should experiment with different release times and trigger settings to get a perfect result! 2. CONTROL ELEMENTS AND CONNECTORS 5

AUTOCOM PRO-XL MDX1600/COMPOSER PRO-XL MDX2600/MULTICOM PRO-XL MDX4600 2.2 The compressor section The RATIO control determines the ratio of input vs. output level with regard to all signals exceeding threshold by more than 10 dB. Although the compression starts earlier, the IKA characteristic ensures the smooth, inaudible onset of the gain reduction, which is why the ratio value will be reached only with 10 dB or more above threshold. It can be set continuously from 1:1 (no compression) to  $\infty$ :1 (limiter). The 12-digit GAIN REDUCTION display (MDX4600: 8-digit) informs you about the current gain reduction applied (1 to 30 dB). The LO CONTOUR switch activates a high-pass filter in the side-chain path and thus avoids the pumping effect caused by high-energy bass frequencies and their influence on the compression process. Use the ATTACK control to determine when the compression sets in once the signal has exceeded threshold (MDX1600 and MDX2600 only). The setting range is from 0.

3 to 300 ms. Press the INTERACTIVE KNEE switch to change from hard knee to IKA characteristic: Input signals exceeding threshold by up to 10 dB will be processed with a soft knee characteristic. Above 10 dB the control characteristic changes from soft knee to a more conventional hard knee compression. The IKA characteristic allows for a subtle and musical compression of the program material, and should be used whenever inaudible compression is desired. The AUTO function, which is activated with the AUTO switch, disables the ATTACK and RELEASE controls and derives these time values automatically from the program material.

It thus allows for a heavy and, at the same time, musical compression of signals with varying levels or of complex program material. The RELEASE control (MDX1600 and MDX2600 only) sets the time when the original 1:1 gain is reached, after the signal has dropped below threshold again. The setting range is from 0.05 to 5 s. Use the TUBE switch (MDX2600 only) to enhance the output signal with the warm and transparent tonal character typically produced by electronic tubes.

Fig. 2.3: Compressor section control elements Use the THRESHOLD control to adjust the compressor threshold from -40 to +20 dB. These three LEDs (AUTOCOM PRO-XL and COMPOSER PRO-XL only) indicate whether the input signal is above or below the adjusted compressor threshold. The yellow LED in the middle refers to the IKA soft knee range (if IKA is on). Activating the SC EXT switch interrupts the link between the signal input and the compressor control section. At the same time, an external control signal can be fed in via the rear panel SC RETURN jack, taking over control of the input signal dynamics reduction. You can, for example, intensify the control function in a specific frequency range by inserting an equalizer via the SC SEND AND SC RETURN jacks. Detailed information on this special application can be found in chapter 3 EXAMPLES OF SIDECHAIN APPLICATIONS. This function, too, is only available on the AUTOCOM PRO-XL and COMPOSER PRO-XL.

The SC MON switch links the sidechain input signal to the audio output, thereby muting the audio input signal. The GAIN REDUCTION display reads the value adjusted. The range is from -30 to +18 dB (MDX4600: -24 to +18 dB). The IN/OUT switch activates the corresponding channel. It provides a so-called hard bypass, i.e. During this process the volume is reduced audibly. The levels of the compressed vs. These two levels should be the same. If a somewhat more open sound processing profile is required, you can set the attack and release times manually (AUTO switch not pressed).

Start with a longer Release time, then make it gradually shorter. You will soon notice an unnatural pumping effect caused by rapidly changing levels. Select a longer release time until the effect cannot be heard any longer. The Attack time setting, too, is highly dependent on the music material. Select longer attack times for a subtle and musical compression.

As a result you avoid attack portions of treble signals being cut off if compression is triggered by a high-level bass drum beat that is played at the same time. The sound remains transparent and compact throughout. If the compressor is being used as a limiter, the attack time should be as short as possible. This, in combination with a high ratio (>20:1), a medium to long release time and the maximum possible threshold will protect your sound reinforcement system effectively from getting overloaded. Fig.

2.5: De-esser section control elements From a circuitry point of view, the de-esser is placed in the sidechain path of the compressor, so it will operate only if the compressor is active. LEVEL control (MDX2600). Instead of an adjustable enhancer, the COMPOSER PRO-XL has a controllable deesser, which helps you eliminate hiss noise contained in the audio signal. The LEVEL control determines the amount of frequency suppression. DE-ESSER switch (MDX1600).

The AUTOCOM PRO-XL also has a de-esser. At the touch of a button you can enhance the audio signal considerably, especially when processing can be found in the compressor vocal recordings. Switch section. DE-ESSER LEVEL (MDX2600).

The LED chain reads the current attenuation within a range from +3 to +12 dB. MALE switch. This switch adapts the de-esser to the male (switch pressed) or female registers (not pressed). IN/OUT switch. Switches the de-esser on and off. ENHANCER switch (MDX2600 and MDX4600). Activates the dynamic enhancer. ENHANCER LEVEL. The LED chain reads the current treble boost within a range from -30 to 0 dB (MDX1600 only). IN/OUT switch (MDX1600).

Use this switch to activate the enhancer circuit, e.g. to assess the effect the enhancer has on the audio signal. 2.4 The de-esser section 2.

3 The dynamic enhancer section 2.5 The peak limiter section Fig. 2.4: Dynamic enhancer section control elements The dynamic enhancer circuit implemented in all three dynamic processors allows you to dynamically enhance the treble range. Since the bass portions of a music signal often have the highest energy yield, they usually are the ones that trigger the compression process, thus also reducing the gain of middle to high frequencies.

The enhancer controls the compression process and gradually adds more highs, the stronger the treble range is compressed, so as to make up for the subjective loss of high-frequency content.



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**LEVEL control (MDX1600).** The AUTOCOM PRO-XL features an adjustable enhancer, on which you can set the amount of treble boost with the LEVEL control. Fig. 2.6: Peak limiter section control elements The peak limiter limits the signal to an adjustable level. When the LIMITER control is turned fully to the right, the limiter is switched off. Owing to its extremely fast zero attack, this circuit is capable of limiting signal peaks without any overshoot. If the signal is limited for more than 20 ms, the overall gain is reduced for about 1 s to avoid strong and thus audible limiter effects. 2.

**CONTROL ELEMENTS AND CONNECTORS 7 + AUTOCOM PRO-XL MDX1600/COMPOSER PRO-XL MDX2600/MULTICOM PRO-XL MDX4600** If you wish to use the peak limiter as a protecting device, the LIMITER control and the OUTPUT control in the compressor section should be set so that the peak limiter responds only rarely or never at all. It should be triggered by peak signals only. To achieve creative sound effects, on the other hand, you can also intentionally drive the peak limiter into this peak limiting range. The LIMIT LED lights up as soon as the limiter is on. 2.6 The rear panel control elements Fig. 2.9: SIDECHAIN connectors SIDECHAIN SEND. This is the unbalanced sidechain output, which allows you to route the audio signal to other devices for external processing. SIDECHAIN RETURN.

The sidechain input allows you to use an external signal or the processed (e.g. with an equalizer) audio signal routed from the SIDECHAIN SEND jack to control your COMPOSER PRO-XL or AUTOCOM PRO-XL. Fig. 2.

7: Power supply and fuse FUSE HOLDER/VOLTAGE SELECTOR. Before connecting the unit to the mains, ensure that the voltage setting matches your local voltage. A blown fuse should only be replaced by a fuse of the same type and rating. Please refer to chapter 6 SPECIFICATIONS for details. MAINS CONNECTION.

Use the power cord supplied with the unit to connect it to the mains. Please note the instructions given in chapter 5 INSTALLATION. OUTPUTS. These are the audio outputs of your dynamics processor. The two matching 1/4" TRS and XLR connectors are wired in parallel and balanced. Of course, unbalanced cables can be connected here as well. OPERATING LEVEL switch. This switch can be used to adapt the COMPOSER PRO-XL, AUTOCOM PRO-XL or MULTICOM PRO-XL to various operating levels, i.e. to toggle between home recording level (-10 dBV) and studio level (+4 dBu).

The level meters will be referenced automatically to the nominal level adjusted, so that the compressor works in its optimum operating range. 3. EXAMPLES OF SIDECHAIN APPLICATIONS A very common type of application is to make the compressor threshold frequency-dependent by inserting a graphic or parametric equalizer into the side-chain path. To be able to keep the threshold setting on the MDX1600 or MDX2600, unwanted frequencies should be cut with an inserted equalizer, without affecting the levels of selected frequencies. For example, to control the compressor from a narrow-band midrange frequency band, we recommend reducing the bass and treble controls on the inserted EQ, while leaving the midrange control set to 0 dB. 3.1 Eliminating interference Insert an equalizer into the sidechain control path in the following order: SIDECHAIN SEND - equalizer - SIDECHAIN RETURN. Turn the THRESHOLD control to the left until the GAIN REDUCTION meter reads a clearly noticeable gain reduction. Now the equalizer must be set so that all frequencies are reduced in level, except for the interference frequencies. Thus, the interference signal will trigger the compression.

Using this technique you can, for example, reduce the dynamics of a bass drum that is too loud in an existing recording. Simply use an equalizer to cut all frequencies above 150 Hz, so that the compression will be triggered by the individual beats of the bass drum. + To monitor the equalizer setting, press the SC MON switch to isolate and play back the processed signal. Once you have checked the EQ setting, switch off SC MON and adjust the THRESHOLD, so that the compressor responds to the interference signals only. Control element SC EXT switch SC MON switch INTERACT KNEE switch LO CONTOUR switch THRESHOLD control Fig.

2.8: Rear panel connectors and switches INPUTS. These are the audio inputs. They are also on balanced 1/4" TRS and XLR connectors. Position IN OUT OFF OUT +20 dB 4:1 OUT 0.

3 msec 150 msec 0 dB RATIO control AUTO switch ATTACK control RELEASE control OUTPUT control Tab. 3.1: Eliminating interference with an inserted equalizer (basic settings) 8 3. EXAMPLES OF SIDECHAIN APPLICATIONS AUTOCOM PRO-XL MDX1600/COMPOSER PRO-XL MDX2600/MULTICOM

PRO-XL MDX4600 3.2 Emphasizing instruments Conversely, you can also use your COMPOSER PRO-XL or AUTOCOM PRO-XL to highlight solo instruments or vocal tracks acoustically in a less than perfect recording. Please note that in this application only the amplitudes of the selected frequencies should be reduced in level. Compression produces a subjective volume reduction of the entire program material. Only those frequencies selected on the equalizer will cause NO compression and thus they seem to be emphasized acoustically. This inverse type of compression helps you make instruments stand out even in low-level passages. You can also insert the COMPOSER PRO-XL, MULTICOM PRO-XL or AUTOCOM PRO-XL into a sub-group insert (miking of drums!) or to process the mix output of the console (Main Out and/or Main Inserts).

Here, too, the processor should be inserted into an insert path, so that you can fade out the overall signal by closing the main faders on the console. 3.3 Time-delayed compression If you feed the audio signal directly into the SC RETURN input and at the same time route it to the audio input via a delay unit, the dynamics processor will work anticipatorily. With a bit of tweaking you can achieve zero attack effects for specific frequencies. Longer delays produce an effect that is similar to an audio tape being played back in reverse. 3.4 Voice over compression (ducking) You can use the COMPOSER PRO-XL and AUTOCOM PRO-XL to lower music to a low background level as soon as a speaker speaks into the microphone. In this type of application the compressor section functions like an automatic fader controlled by the speaker's microphone, which is also connected to the SC RETURN input via a preamplifier. Music and microphone signal are then mixed with the help of a console. This application is called voice over compression or ducking, and is used frequently in discotheques or radio stations.

Fig. 4.2: Compressing a main mix signal with the MDX2600 + When you process a stereo mix signal, we recommend that you link the channels in couple mode, because there is no faster and easier way to find the right settings. However, remember to set the output levels separately! 3.5 Triggering additional sounds from a rhythm track This technique is used to give a rhythm track more punch by synchronizing the rhythm instruments after recording.



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Only the expander/gate section is required, the compressor and/or peak limiter remain disabled. Insert the bass guitar track into the audio path of the COMPOSER PRO-XL (or AUTOCOM PRO-XL), and route the bass drum to the SC RETURN input. Activate the SC EXT function to trigger the bass guitar with the kick drum, i.e. the kick drum exceeds the expander threshold, allowing the bass guitar signal to pass until the level has dropped below threshold again.

If you wish to use the dynamics processor as part of a P.A. system integrating an active frequency crossover (e.g. BEHRINGER SUPER-X PRO CX2310), you can connect it between the mixing console output and the crossover input, or between the crossover and the power amps. In the latter configuration you can process individual frequency ranges specifically (multi-band compression) to prevent a few highenergy frequencies triggering the compressor to process the entire frequency range. The illustration below shows how to set up this configuration with the BEHRINGER MULTICOM PRO-XL MDX4600. 4. WIRING Dynamics processors are usually inserted into the insert paths of a mixing console, because their signals are not added to the mix (unlike reverb or phaser effects, which are fed into the signal path via the aux busses). Fig.

4.1: Inserting a dynamics processor into the insert path Fig. 4.3: Multi-band compression with the MDX4600 4. WIRING 9 AUTOCOM PRO-XL MDX1600/COMPOSER PRO-XL MDX2600/MULTICOM PRO-XL MDX4600 5. INSTALLATION 5.1 Rack installation Each device requires one rack unit for installation in a 19" rack. Please allow an additional 4" of rack depth for the rear panel connectors. Be sure that there is enough air space around the unit for cooling. To avoid overheating, do not place the unit on power amps, for example.

5.2 Audio connections You will need a large number of cables for the different applications. The illustrations below show the wiring of these cables. Be sure to use only high-grade cables. The audio connections of the MULTICOM PRO-XL, AUTOCOM PRO-XL and COMPOSER PRO-XL are electronically balanced to avoid hum problems.

You can, of course, also connect unbalanced devices to the balanced inputs/outputs. Either use mono plugs, or link the ring and shaft on stereo plugs (or pins 1 and 3 in the case of XLR connectors). Fig. 5.3: 1/4" TRS connector Fig.

5.4: 1/4" TRS connector for insert applications Fig. 5.1: XLR connections Fig. 5.2: 1/4" TS connector 10 5. INSTALLATION AUTOCOM PRO-XL MDX1600/COMPOSER PRO-XL MDX2600/MULTICOM PRO-XL MDX4600 6. SPECIFICATIONS AUDIO INPUTS Type Impedance +4 dBu -10 dBV Operating level Max. input level CMRR AUDIO OUTPUTS Type Impedance Max. output level SIDECHAIN INPUTS Type Impedance Max.

input level SIDECHAIN OUTPUTS Type Impedance Max. output level SYSTEM SPECIFICATIONS Bandwidth Frequency range S/N ratio THD XLR and 1/4" TRS connectors, HF-shielded, servo-balanced 90 k bal., 45 k unbal. @ 1 kHz 180 k bal., 90 k unbal. @ 1 kHz +4 dBu/-10 dBV (switchable) +22 dBu balanced and unbalanced typ. 40 dB, >60 dB @ 1 kHz XLR and 1/4" TRS connectors Electronically controlled servobalanced output stage 95 bal., 50 unbal. @ 1 kHz +21 dBu, +20 dBm balanced and unbalanced 1/4" TS connector, unbalanced, HF-shielded, DC-decoupled 45 k +24 dBu 1/4" TS connector, unbalanced, HF-shielded, DC-decoupled 50 +21 dBu 20 Hz to 20 kHz, +0/-0.5 dB 0.

35 Hz to 200 kHz, +0/-3 dB 115 dB, unweighted, 22 Hz - 22 kHz 0.008 % typ. @ +4 dBu, 1 kHz, gain 1 0.07 % typ. @ +20 dBu, 1 kHz, gain 1 0.

01 % typ. SMPTE -110 dB @ 1 kHz IRC (Interactive Ratio Control) expander variable (OFF to +10 dB) variable (1:1 to 1:8) <1 msec/50 dB, programdependent variable SLOW: 100 msec/1 dB, FAST: 100 msec/100 dB IKA (Interactive Knee Adaptation) compressor variable (-40 to +20 dB) variable (1:1 to oo :1) variable (manual or automatic) wave adaptive compressor variable (0.3 msec/20 dB to 300 msec/20 dB) variable (0.05 sec/20 dB to 5 sec/20 dB) typ. 15 msec for 10 dB, 5 msec for 20 dB, 3 msec for 30 dB program-dependent, typ.

125 dB/sec variable (-20 to +20 dB) PEAK LIMITER SECTION Type Level Ratio Level 1 limiter type Attack Release Level 2 limiter type Attack Release DE-ESSER SECTION Type MDX1600 Filter frequency Filter bandwidth Level reduction MDX2600 Filter frequencies Filter bandwidth Level reduction IGC (Interactive Gain Control) peak limiter variable (0 dB to OFF (+21 dBu)) oo :1 clipper zero zero program limiter program-dependent, typ. <5 msec program-dependent, typ. 20 dB/sec VAD (Voice-Adaptive De-esser) 5-8 kHz program-dependent max. 15 dB 8.6 kHz (female), 7.5 kHz (male) program-dependent variable, max. 15 dB DYNAMIC ENHANCER SECTION Type IDE (Interactive Dynamic Enhancer) MDX1600 Filter frequency 2.5 kHz (lower cut-off frequency) Characteristic high-pass filter (6 dB/oct.) Boost variable, max. 40 dB @ 7.

5 kHz MDX2600 Filter frequency Characteristic Boost MDX4600 Filter frequency Characteristic Boost POWER SUPPLY Mains voltage General export model Power consumption MDX1600/MDX2600 MDX4600 Fuse MDX1600/MDX2600 MDX4600 Mains connection DIMENSIONS/WEIGHT Dimensions MDX1600 Weight Shipping weight MDX2600 Weight Shipping weight MDX4600 Weight Shipping weight 2.5 kHz (lower cut-off frequency) high-pass filter (6 dB/oct.) max. 28 dB @ 7.5 kHz 2.5 kHz (lower cut-off frequency) high-pass filter (6 dB/oct.) max. 28 dB @ 7.5 kHz USA/Canada 120 V ~, 60 Hz U.K.

/Australia 240 V ~, 50 Hz Europe 230 V ~, 50 Hz 100 -120 V ~, 200 -240 V ~, 50 - 60 Hz max. 15 W max. 18 W 100 -120 V ~: T 250 mA 200 -240 V ~: T 125 mA 100 -120 V ~: T 630 mA 200 -240 V ~: T 315 mA standard IEC receptacle H H H H IMD Crosstalk EXPANDER/GATE SECTION Type Threshold Ratio Attack Release COMPRESSOR SECTION Type Threshold Ratio Attack/release Auto characteristic Manual attack time Manual release time Auto attack time Auto release time Output approx. 1 3/4" (44.5 mm) x 19" (482.

6 mm) x 8 1/2" (217 mm) approx. 2.1 kg approx. 3.3 kg approx.

2.1 kg approx. 3.3 kg approx. 2.25 kg approx. 3.45 kg BEHRINGER makes every effort to ensure the highest standard of quality. Necessary modifications are carried out without notice. Thus, the specifications and design of the device may differ from the information given in this manual.

6. SPECIFICATIONS 11 AUTOCOM PRO-XL MDX1600/COMPOSER PRO-XL MDX2600/MULTICOM PRO-XL MDX4600 7. WARRANTY § 1 WARRANTY CARD/ONLINE REGISTRATION To be protected by the extended warranty, the buyer must complete and return the enclosed warranty card within 14 days of the date of purchase to BEHRINGER Spezielle Studioteknik GmbH, in accordance with the conditions stipulated in § 3. Failure to return the card in due time (date as per postmark) will void any extended warranty claims. Based on the conditions herein, the buyer may also choose to use the online registration option via the Internet (www.behringer.com or www.behringer.de). § 2 WARRANTY 1.

BEHRINGER (BEHRINGER Spezielle Studioteknik GmbH including all BEHRINGER subsidiaries listed on the enclosed page, except BEHRINGER Japan) warrants the mechanical and electronic components of this product to be free of defects in material and workmanship for a period of one (1) year\* from the original date of purchase, in accordance with the warranty regulations described below.



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If the product shows any defects within the specified warranty period that are not excluded from this warranty as described under § 3 and 4, BEHRINGER shall, at its discretion, either replace or repair the product using suitable new or reconditioned parts. In the case that other parts are used which constitute an improvement, BEHRINGER may, at its discretion, charge the customer for the additional cost of these parts. 2. If the warranty claim proves to be justified, the product will be returned to the user freight prepaid.

3. Warranty claims other than those indicated above are expressly excluded. § 3 RETURN AUTHORIZATION NUMBER 1. To obtain warranty service, the buyer (or his authorized dealer) must call BEHRINGER (see enclosed list) during normal business hours BEFORE returning the product. All inquiries must be accompanied by a description of the problem.

BEHRINGER will then issue a return authorization number. 2. Subsequently, the product must be returned in its original shipping carton, together with the return authorization number to the address indicated by BEHRINGER. 3. Shipments without freight prepaid will not be accepted. § 4 WARRANTY REGULATIONS 1. @@@@2. @@@@ Under the terms of this warranty, BEHRINGER shall not be held responsible for any cost resulting from such a modification/adaptation. 3. Free inspections and maintenance/repair work are expressly excluded from this warranty, in particular, if caused by improper handling of the product by the user.

This also applies to defects caused by normal wear and tear, in particular, of faders, potentiometers, keys/buttons and similar parts. 4. Damages/defects caused by the following conditions are not covered by this warranty: s improper handling, neglect or failure to operate the unit in compliance with the instructions given in BEHRINGER user or service manuals. s connection or operation of the unit in any way that does not comply with the technical or safety regulations applicable in the country where the product is used. s damages/defects caused by force majeure or any other condition that is beyond the control of BEHRINGER. 5. Any repair or opening of the unit carried out by unauthorized personnel (user included) will void the warranty. 6. If an inspection of the product by BEHRINGER shows that the defect in question is not covered by the warranty, the inspection costs are payable by the customer. 7.

Products which do not meet the terms of this warranty will be repaired exclusively at the buyers expense. BEHRINGER will inform the buyer of any such circumstance. If the buyer fails to submit a written repair order within 6 weeks after notification, BEHRINGER will return the unit C.O.D. with a separate invoice for freight and packing. Such costs will also be invoiced separately when the buyer has sent in a written repair order. § 5 WARRANTY TRANSFERABILITY This warranty is extended exclusively to the original buyer (customer of retail dealer) and is not transferable to anyone who may subsequently purchase this product. No other person (retail dealer, etc.) shall be entitled to give any warranty promise on behalf of BEHRINGER.

§ 6 CLAIM FOR DAMAGES Failure of BEHRINGER to provide proper warranty service shall not entitle the buyer to claim (consequential) damages. In no event shall the liability of BEHRINGER exceed the invoiced value of the product. § 7 OTHER WARRANTY RIGHTS AND NATIONAL LAW 1. This warranty does not exclude or limit the buyers statutory rights provided by national law, in particular, any such rights against the seller that arise from a legally effective purchase contract. 2. The warranty regulations mentioned herein are applicable unless they constitute an infringement of national warranty law. \* Customers in the European Union please contact BEHRINGER Germany Support for further details. The information contained in this manual is subject to change without notice. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording of any kind, for any purpose, without the express written permission of BEHRINGER Spezielle Studiotechnik GmbH.

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