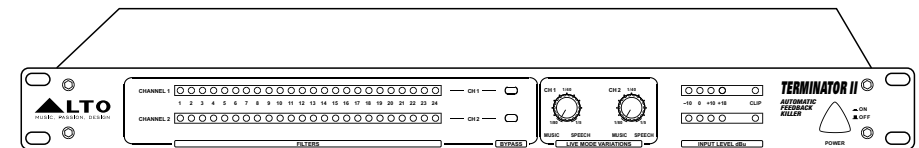


User's Manual

TERMINATOR II

DIGITAL PROCESSOR

Automatic Feedback Killer



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English

IMPORTANT SAFETY INSTRUCTION



TO REDUCE THE RISK OF ELECTRIC SHOCK PLEASE DO NOT REMOVE THE COVER OR THE BACK PANEL OF THIS EQUIPMENT. THERE ARE NO PARTS NEEDED BY USER INSIDE THE EQUIPMENT. FOR SERVICE, PLEASE CONTACT QUALIFIED SERVICE CENTERS.

 This symbol, wherever used, alerts you to the presence of un-insulated and dangerous voltages within the product enclosure. These are voltages that may be sufficient to constitute the risk of electric shock or death.


 This symbol, wherever used, alerts you to important operating and maintenance instructions. Please read.

⊕ Protective Ground Terminal
 ~ AC mains (Alternating Current)
 ⚡ Hazardous Live Terminal

ON: Denotes the product is turned on.
 OFF: Denotes the product is turned off.

CAUTION

Describes precautions that should be observed to prevent damage to the product.

1. Read this Manual carefully before operation.
2. Keep this Manual in a safe place.
3. Be aware of all warnings reported with this symbol. 


4. Keep this Equipment away from water and moisture.
5. Clean it only with dry cloth. Do not use solvent or other chemicals.
6. Do not damp or cover any cooling opening. Install the equipment only in accordance with the Manufacturer's instructions.
7. Power Cords are designed for your safety. Do not remove Ground connections! If the plug does not fit your AC outlet, seek advice from a qualified electrician. Protect the power cord and plug from any physical stress to avoid risk of electric shock. Do not place heavy objects on the power cord. This could cause electric shock or fire.
8. Unplug this equipment when unused for long periods of time or during a storm.
9. Refer all service to qualified service personnel only. Do not perform any servicing other than those instructions contained within the User's Manual.
10. To prevent fire and damage to the product, use only the recommended fuse type as indicated in this manual. Do not short-circuit the fuse holder. Before replacing the fuse, make sure that the product is OFF and disconnected from the AC outlet.

WARNING

To reduce the risk of electric shock and fire, do not expose this equipment to moisture or rain.



Dispose of this product should not be placed in municipal waste and should be separate collection.

11. Move this Equipment only with a cart, stand, tripod, or bracket, specified by the manufacturer, or sold with the Equipment. When a cart is used, use caution when moving the cart / equipment combination to avoid possible injury from tip-over. 

12. Permanent hearing loss may be caused by exposure to extremely high noise levels. The US. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible exposure to noise level. These are shown in the following chart:

HOURS X DAY	SPL	EXAMPLE
8	90	Small gig
6	92	train
4	95	Subway train
3	97	High level desktop monitors
2	100	Classic music concert
1,5	102	
1	105	
0,5	110	
0,25 or less	115	Rock concert

According to OSHA, an exposure to high SPL in excess of these limits may result in the loss of heat. To avoid the potential damage of heat, it is recommended that Personnel exposed to equipment capable of generating high SPL use hearing protection while such equipment is under operation.

The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

The mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

1. WARRANTY REGISTRATION CARD

To obtain Warranty Service, the buyer should first fill out and return the enclosed Warranty Registration Card within 10 days of the Purchase Date.

All the information presented in this Warranty Registration Card gives the manufacturer a better understanding of the sales status, so as to provide a more effective and efficient after-sales warranty service. Please fill out all the information carefully and genuinely, miswriting or absence of this card will void your warranty service.

2. RETURN NOTICE

- 2.1 In case of return for any warranty service, please make sure that the product is well packed in its original shipping carton, and it can protect your unit from any other extra damage.
- 2.2 Please provide a copy of your sales receipt or other proof of purchase with the returned machine, and give detail information about your return address and contact telephone number.
- 2.3 A brief description of the defect will be appreciated.
- 2.4 Please prepay all the costs involved in the return shipping, handling and insurance.

3. TERMS AND CONDITIONS

- 3.1 ▲LTO warrants that this product will be free from any defects in materials and/or workmanship for a period of 1 year from the purchase date if you have completed the Warranty Registration Card in time.
- 3.2 The warranty service is only available to the original consumer, who purchased this product directly from the retail dealer, and it can not be transferred.
- 3.3 During the warranty service, ▲LTO may repair or replace this product at its own option at no charge to you for parts or for labor in accordance with the right side of this limited warranty.
- 3.4 This warranty does not apply to the damages to this product that occurred as the following conditions:
 - Instead of operating in accordance with the user's manual thoroughly, any abuse or misuse of this product.
 - Normal tear and wear.
 - The product has been altered or modified in any way.
 - Damage which may have been caused either directly or indirectly by another product / force // etc.
 - Abnormal service or repairing by anyone other than the qualified personnel or technician.

And in such cases, all the expenses will be charged to the buyer.

- 3.5 In no event shall ▲LTO be liable for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.
- 3.6 This warranty gives you the specific rights, and these rights are compatible with the state laws, you may also have other statutory rights that may vary from state to state.

QUICK START

1. TERMINATOR II QUICK START - SET UP MODE

- 1.1 After connecting TERMINATOR II to the mixer channels or subgroups follow these points:
- 1.2 Press and hold the BYPASS button (for more than 4 seconds) related to the channel you want to set up (CHANNEL 1 or CHANNEL 2): all 24 filter leds will start flashing
- 1.3 Start generating intentional feedbacks increasing slowly the GAIN/VOLUME on the mixer: TERMINATOR II will activate gradually the filters and the correspondent leds will light
- 1.4 Usually 10 to 16 filters are enough to guarantee a safe set up without modifying the audio timbre
- 1.5 Remember you can use up to 2 independent channels connected to TERMINATOR II
- 1.6 To exit SET UP MODE and to STORE the fixed filter press quickly the related channel BYPASS button: all filter leds turn on for a few seconds, then only the stored ones keep on lighting
- 1.7 Now TERMINATOR II is set on LIVE MODE

2. TERMINATOR II QUICK START - LIVE MODE

- 2.1 During the performance the accidental LIVE feedbacks are automatically detected and killed: a new led will light to indicate the activation of a new LIVE filter
- 2.2 If occasionally all 24 filters are activated (all filter leds on) and new LIVE feedback occurs, TERMINATOR II is able to kill the new feedback substituting the oldest less-used filter: the correspondent led will start flashing
- 2.3 You can operate in real time on the LIVE MODE VARIATIONS to adjust the filter Q according to your audio source: generally for Music we suggest to turn the knob towards 1/80th, for Speech towards 1/5th)
- 2.4 If you need to RESET the LIVE filters (keeping the FIXED ones previously stored during the SET UP MODE) press and hold the BYPASS button for about 2 seconds till only the FIXED filter leds keep on lighting
- 2.5 If you need to RESET completely TERMINATOR II and start a new SET UP, press and hold the BYPASS button for more than 4 seconds till all 24 filter leds will start flashing

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1. INTRODUCTION

Thank you for your purchasing of the ▲LTO TERMINATOR II. The TERMINATOR II is a Dual Channel Digital Processor. It is designed to provide state of the art Feedback elimination processing, for fixed installation or live event, while maintaining a simple and intuitive control interface.

The TERMINATOR II provides up to 24 filters per channel (CH1 & CH2), offers independent selectable modes, live filters lift, process bypasses, continuously variable types of filtration, with widths between 1/80th and 1/5th Octave of which are all available on a intuitive user interface front panel.

Enjoy your TERMINATOR II and make sure to read this Manual carefully before operation!

2. FEATURES

- ▲ 24 Programmable Filters per Channel
- ▲ Dual Independent Channel Processing
- ▲ Live and Fixed Filter Modes
- ▲ Automatic Live Filter Release
- ▲ Selectable Application of ▲LTO proprietary Filter Variations (Music/Speech)
- ▲ 2 x Input Channel Metering
- ▲ 24 LED Filter Metering per Channel
- ▲ 2 x XLR and 2 x TRS Electronically Balanced Inputs and Outputs
- ▲ Selectable Operating Level Switches (+4 dBu / -10 dBv)
- ▲ Rear Panel Lockout Switch

6. TECHNICAL SPECIFICATION

Analog Inputs

2 x female XLR and 2 x 1/4" TRS	Electronically Balanced / Unbalanced, RF filter suppressor
Input impedance	30k ohm Balanced / 15k ohm Unbalanced
Max Input line level	+20.5 dBu

Analog Outputs

2 x male XLR and 2 x 1/4" TRS	Electronically Balanced / Unbalanced, RF filter suppressor
Output impedance	100 Ohm Balanced / 50 Ohm Unbalanced
Max Output level	+14.5 dBu

A/D Performance

Dynamic Range	114 dB, A-weighted
A/D Conversion	24 bit

D/A Performance

Dynamic Range	100 dB, A-weighted
D/A Conversion	24 bit

System Performance

Sample Rate	48 kHz
Dynamic Range	100 dB, A-weighted
THD+N %	0.01 %, 1 kHz
S/N Ratio	100 dB, A-weighted
Frequency Response	20 Hz to 20 kHz, +/- 0.5 dB
Inter channel Crosstalk	100 dB, A-weighted
Crosstalk input to output	100 dB, A-weighted
Operating Voltage	230 VAC 50/60 Hz 115 VAC 50/60 Hz
Power Consumption	15 W

Physical

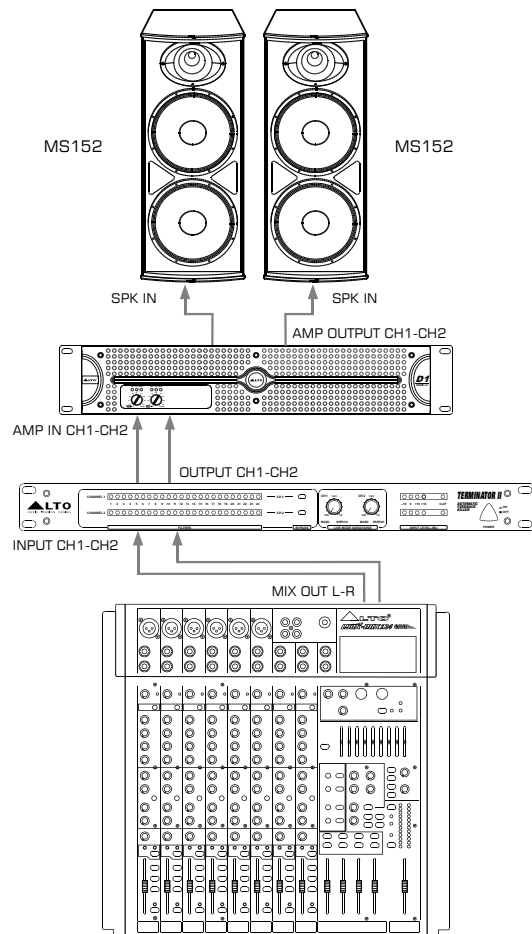
Dimension	483 x 195 x 44 mm
Net Weight	3.1kg



5. INSTALLATION AND CONNECTION

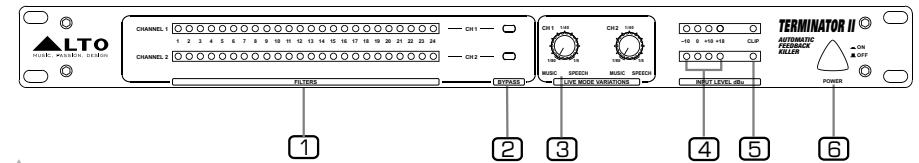
ON LINE with the Outputs of the Mixer

- 1- Connect the Outputs L-R from the mixer to the inputs CH 1 & CH 2 of TERMINATOR II with the XLR or TRS (tip-ring-sleeve) stereo jack.
 - 2- Connect the Outputs CH1 & CH2 of TERMINATOR II at the Inputs of power amplifiers.
 - 3- Set the sensitivity at +4 dBu on the TERMINATOR II and adjust the L-R fader control on the MIXER for having a necessary level on TERMINATOR II.
- ⊗ For maximum performance and proper operation, the average input signal should consistently light up at the 0 dBu LED and the +10 dBu LED lighting occasionally.



3. CONTROL ELEMENTS

Front Panel:



1 Filters LEDs

The TERMINATOR II offers 24 notch filters (RED LED) for each channel, which are used to indicate the number of active notch filter. The LEDs that always blink for each channel is the last Live inserted notch filter.

2 Bypass

- a-This button is used to bypass the notch filters in the signal path by pressing quickly (about 1 second).
 - b-Pressing and holding the BYPASS button (about 2 Sec) is used to reset the LIVE filters (CLEAR 2 Sec.).
 - c-Pressing and holding the BYPASS button (more than 4 Sec.) is used to reset the fixed filters and enter the SETUP Mode (SETUP 4 Sec.).
- For more information of filter reset, please see the Clearing Filters in the USER SETUP section.

3 LIVE Mode Variations

This knob is used in LIVE MODE to select the application of ALTO proprietary notch filter, independently on CH1 & CH2. Each selected mode controls the width (1/80th to 1/5th) of the notch filter used to remove the feedback, the velocity of the filter activation and the sensibility in the feedback analysis.

4 Input Level Bar Graph

These four LEDs indicate input level of the TERMINATOR II with a range from -10 dBu to +18 dBu.

⊗ **NOTE:** For maximum performance and proper operation, the average input signal should consistently light up at the 0 dBu LED and the +10 dBu LED lighting occasionally.

5 Clip LED

This LED indicates that there is signal clipping at the Inputs. If necessary, verify the correct position of input selector -10dBv /+4dBu, or setting the level of the chain with a external pink noise signal.

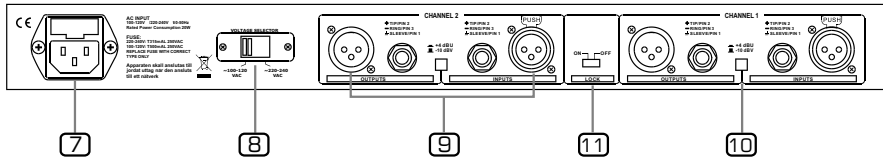
6 Power Switch

It switches your TERMINATOR II On/Off



3. CONTROL ELEMENTS

Rear Panel:



7 AC Inlet and Fuse holder

Standard IEC receptacle. Connect your TERMINATOR II to the AC Inlet with the supplied AC power cord. Before powering up your TERMINATOR II for the first time, make certain the stated power requirement of the unit matches the voltage supplied by the AC socket.

If the fuse blows, replaced with a fuse of the correct type only.

8 Voltage Selector

This switch has two choices for voltage, 100-120 VAC or 220-240 VAC.

9 Input/Output Connectors

Two types of input connectors are provided for input connections: 2 x female locking XLR type connectors, and 2 x 1/4" TRS jack connectors (tip-ring-sleeve). The maximum input level that the processor can accept is +20 dBu (ref.: 0.775Vrms).

10 Operating Level Switch

This button allows you to select between either +4 dBu or -10 dBv nominal operating level.

11 Lock Switch

This switch locks/unlocks all access to the front panel of the TERMINATOR II.

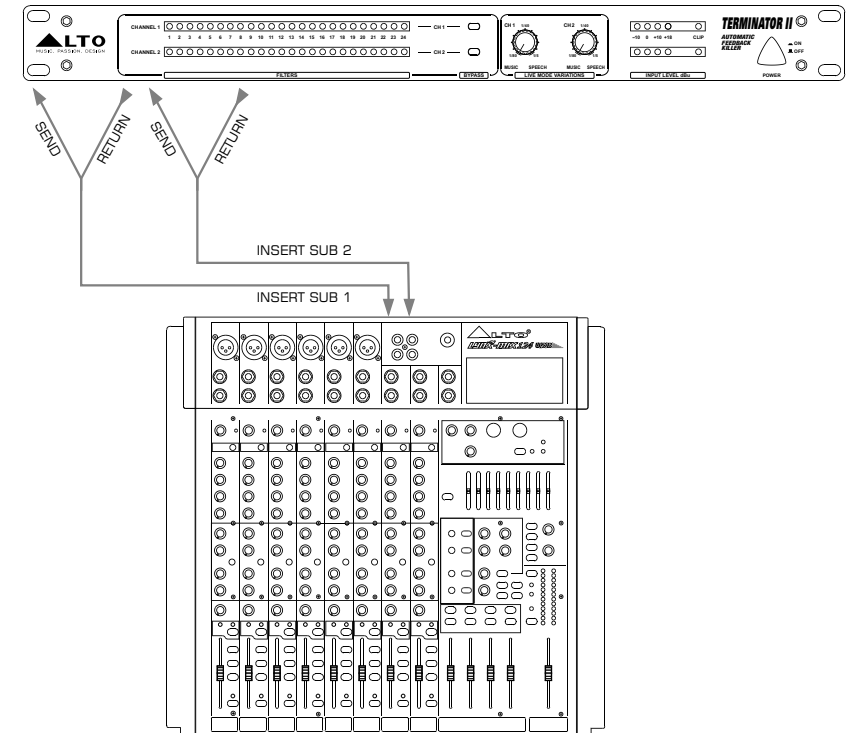


5. INSTALLATION AND CONNECTION

Insert on the SUB GROUP/MAIN L-R of the Mixer

- 1- Connect the TRS (tip-ring-sleeve) stereo jack into the Mixer SUB GROUP/ MAIN L-R, Insert socket.
- 2- Connect the Send stereo jack (unbalanced) to the CH1 Input of TERMINATOR II and the CH1 Output of TERMINATOR II with a Return stereo jack (unbalanced).
- 3- Set the sensitivity at -10 dBu on the TERMINATOR II and adjust the SUB GROUP/ MAIN L-R, fader control on the MIXER for having a necessary level on TERMINATOR II.

✘ For maximum performance and proper operation, the average input signal should consistently light up at the 0 dBu LED and the +10 dBu LED lighting occasionally.



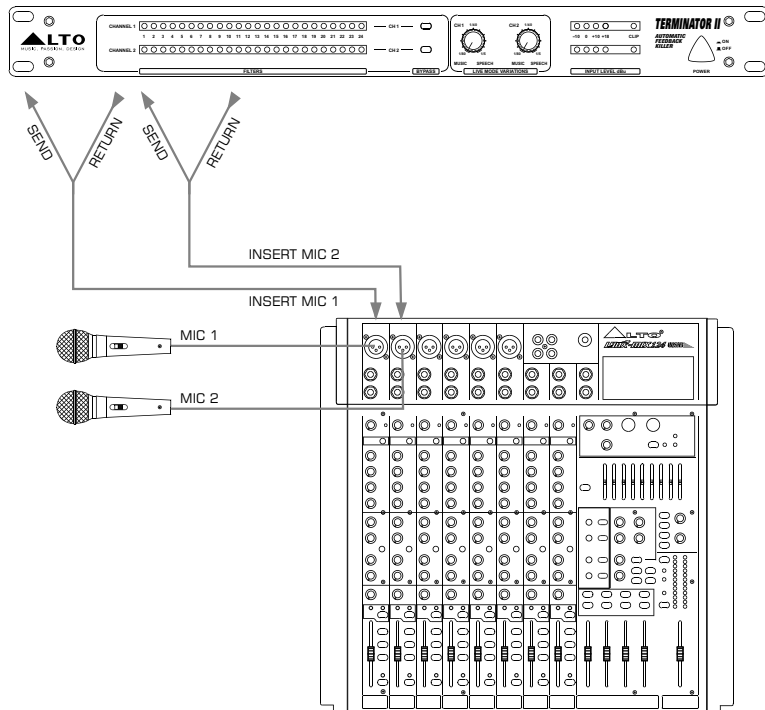


5. INSTALLATION AND CONNECTION

Insert on the MIC channel

- 1- Connect the TRS (tip-ring-sleeve) stereo jack into the mixer MIC channel, Insert socket.
- 2- Connect the Send stereo jack (unbalanced) to the CH1 Input of TERMINATOR II and the CH1 Output of TERMINATOR II with a Return stereo jack (unbalanced).
- 3- Set the sensitivity at -10 dBu on the TERMINATOR II and adjust the MIC Gain control on the MIXER for having a necessary level on TERMINATOR II.
- 4- Repeat the same step connections for the CH2 of TERMINATOR II if you like to use.

✘ For maximum performance and proper operation, the average input signal should consistently light up at the 0 dBu LED and the +10 dBu LED lighting occasionally.



4. USER SETUP

1 Setting Audio System

There are three basic ways you can use the TERMINATOR II combine with your audio system. It can be:

1. Connected to a MIC channel of a MIXER, into the "Insert" jack (send/return).
2. Connected to the SUBGROUP/MAIN OUTPUTS (L/R) of a MIXER into the "Insert" jack (send/return).

The connection of TERMINATOR II to Insert points, is probably the best selection, the levels present in most mixers are pre-fader, (normally 10 dBu) and flow direct to TERMINATOR II. In this way any fader level variations do not modified the setup of TERMINATOR II.

✘ For the best performance and proper operation, the average input signal should consistently light up at the 0 dBu LED and the +10 dBu LED lighting occasionally.

3. Connected "ON LINE" between mixer and PA system. From output of the Mixer to input of TERMINATOR II and from Output of TERMINATOR II to PA input (Stereo Amplifier).

The above setup is used when insert points are not available, set the TERMINATOR II at +4 dBu, this value is correct when you connect the outputs of any mixer directly to the input of TERMINATOR II.

✘ For the best performance and proper operation, the average input signal should constantly light around 0 dBu LED and the +10 dBu LED should light only occasionally.

2 SETUP & LIVE Mode

The TERMINATOR II offers a total number of 24 notch filters for each channel (CH 1/CH 2) and two main operation modes:

a-SETUP mode, with the fixed filters.

b-LIVE mode, with the free filters not used in SETUP mode.

The SETUP mode is used to detect and remove feedback problems in the audio system due to the microphone placement, different environments shapes, etc. Once these filters are set, they can't be removed unless you reset then again.

The LIVE mode is used to detect and remove feedback in "real-time", during the musical events.

The free filters, not used in SETUP mode, automatically work in LIVE mode, the last filter included blink.

1. Using SETUP Mode (SOUND CHECK)

Fixed filters are set before a performance in a process called ringing out a system, this is done after all other setting system has been done.

a-First, bring down the main mix, turn off all music sources and open the MIC (if you use Vocalist) or the different MIC (if you use a Sub-Group).

4. USER SETUP

- b-**Place the TERMINATOR II in SETUP Mode by pressing and holding the BYPASS button for more than 4 seconds.
- c-**All the 24 LEDs and the BYPASS LED will start flashing, indicating SETUP mode is selected for CH1 or CH2 or together.
- d-**Set the level of each CHANNEL with PFL and slowly turn up the Main Mixer Volume, raising the gain of the system, until feedback occurs.
- e-**The TERMINATOR II will detect and remove feedback by placing notch filters on the proper frequencies. Continue to slowly raise the gain until all feedbacks have been eliminated, then exit from SETUP Mode by pressing and releasing the BYPASS button quickly.

All LED turn ON for few seconds, indicating fixed filters are STORED and automatically LIVE Mode is selected, the remaining filters are available in LIVE MODE.

If all 24 filters have been used in SETUP Mode, the SETUP Mode is left automatically and no more filters are available in LIVE Mode.

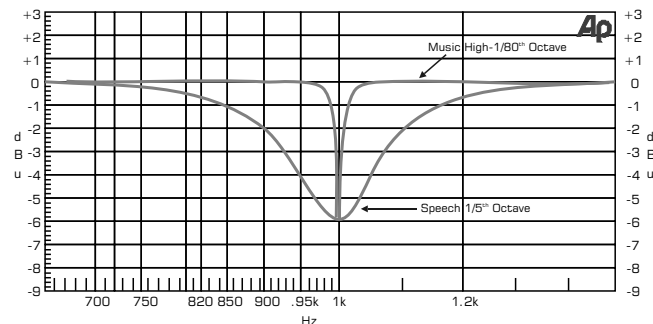
2. Using LIVE Mode (REAL TIME)

The TERMINATOR II operates normally in LIVE Mode (24 notch filters minus the fixed used filters). Live Mode filters are set on the feedback frequency as soon as a new feedback is detected, according to the knob position of the selected LIVE Mode Variations (from MUSIC to SPEECH).

If all LIVE filters are used and a new feedback occurs, the oldest LIVE filter is cleared and reallocate to the new feedback frequency (the correspondent led will light).

The TERMINATOR II will continue to search feedback frequency through the LIVE notch filters.

MUSIC High Q mode, (use notch filters at $1/80^{\text{th}}$ Octave), continuously variable until SPEECH Low Q mode, (use notch filters at $1/5^{\text{th}}$ Octave).



ALTO Notch Filter Q Diagram

4. USER SETUP

3. CLEARING FILTERS

To reset the LIVE filters, press and hold the BYPASS button on the selected channel (for about 2sec till the live filter leds will switch off). The currently active filters will be cleared and the assigned LED will turn off.

If you wish to "reset" all the filters, continue to hold the BYPASS button (more than 4 seconds) until all filter LEDs are "blinking", indicating that you have entered the SETUP Mode and that all filters FIXED and LIVE have been cleared.

4. LOCK ON/OFF

When you finished setting the TERMINATOR II, you can save your setup, switch ON the LOCK selectors in the rear panel.

After this it will be impossible to operate on front panel.

5. AUTOMATIC FILTER RELEASE

The ALTO TERMINATOR II provides the user with 24 notch filters, for each channel, they are enough for normal performances. If several numbers of filters are required, (more than 16), we strongly recommend to operate a new setup of the sound system.

Anyway, even if the TERMINATOR II uses very narrow notch filters, accordingly with the selected application type, unused notch filters must be avoided, to always guarantee the best audio performance.

The TERMINATOR II constantly monitors the status of the LIVE filters and automatically removes the ones that are no longer necessary.