



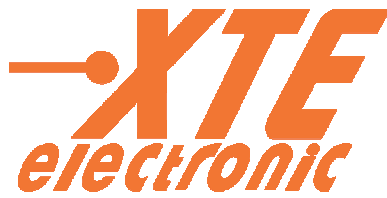
PROFESSIONAL SERIES

ELECTRONIC LIMITER TE 2600



Owner's Manual

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PROFESSIONAL SERIES

ELECTRONIC LIMITER TE 2600

PRODUCT DESCRIPTION

The Automatic Multiband Level Control TE 2600 has been specially developed to control the sound pressure level in an environment.

A typical example would be an amplification system in a public premises, which must guarantee a maximum music programme level equal to and not exceeding the legal limits. Use of the unit TE 2600, if correctly regulated, allows you to indeterminately respect such restrictions even in the face of involuntary intervention on the signal source regulation.

On the contrary to what happens to traditional equipment, TE 2600 ensures a result of the maximum quality: the sound is not affected by modulation or the awful effects of "pumping". Thanks to the special circuitry adopted, the musical message is rich in clarity in the bass notes and highly defined in the acute ones.

FUNCTION

The Automatic Multiband Level Control TE 2600 has been contrived as unitary gain equipment, fitted with just four regulators: the input level, the release time and the controls on the threshold intervention.

The reduced number on controls on the front panel makes installation and tuning easier.

A locking panel prevents possible tampering by unauthorised persons, as required by law.

ADVANTAGES OF MULTIBAND LIMITERS OVER WIDE BAND LIMITERS

Wide band limiters are affected by a significant problem: the spectral gain intermodulation. In practice the level of one part of the spectrum controls the level of the other. A typical example is when a voice is over-ridden by a drum roll or the sudden insert of a speaker that lowers the rest of the music programme.

The highest energy contained tends, in fact, to control the rest of the entire spectrum. So when the lowest frequencies exceed the threshold limit, the highest frequencies are toned down causing the effect of a deep output sound.

A multiband limiter, in contrast to a wide band limiters not subject to this type of behaviour. A multiband limiter actually separates the audio signal into more frequency bands and processes each band separately. However with such a system the parameters to control are more numerous and complex.

The Automatic Multiband Level Control TE 2600 uses an intelligent circuit that automatically controls all the parameters reducing the commands to a minimum.



AUTOMATIC THRESHOLD CORRECTOR

A multiband limiter divides the audio signal in more bands, limits each band individually, and adds them together. The result of this addition could be, however, to have a level different from the present threshold. The conventional method provides for a wide band limiter that elaborates the addition single bands. In this case the disadvantages of a wide band limiter would be introduced as previously described. In the TE 2600 the addition of the two bands is sent to an automatic threshold correction circuit. If the addition exceeds the reference value the circuit individually modifies the threshold of each band. When the addition returns to below the reference value, the individual thresholds of each band returns to the original value. Such a method protects the maximum brilliance of the sound without introducing noticeable distortions.

Finally the TE 2600 adopts a single automatic correction circuit for both channels: this allows for a perfect balance of stereo image ensuring an equal limitation of both stereo channels.

RELEASE TIME

The release time regulation allows for the musical programme density modification. An extremely short release time gives a very narrow dynamic range that can cause distortion at low frequencies. With a moderately short release time the output is maintained as near as possible to the maximum. With quite a long release time the distortion is reduced and a softer rounder sound obtained. An extremely slow release time determines a lower average value output especially if the musical programme contains notably quick variations in level (transient).

POWER SUPPLY

This machine has been made for use with a power supply of AC 230V 50/60 Hz.
The auto-reset protection fuse is situated inside.

CONTROLS AND FUNCTION

Control of threshold levels

The Automatic Multiband Level Control TE 2600 has three controls to regulate the threshold level. The first (5 of Fig.1), distinguished by our logo COARSE, is achieved by a commutator (switch) with a passage of 2dB, and a range of intervention from -20dBm to +2dBm.

The second, much more precise and distinguished by the logo FINE (6 of Fig.1), allows for preceding regulation correction with a field of action from -1dB to +1dB.

If the level of the music programme to be controlled too high and the COARSE control not enough, it is possible to insert a third control, distinguished by the logo RANGE (7 of Fig.1), which allows for an output level reduction of 20dB.

The simultaneous use of these three controls allows you to obtain a threshold level regulation in an interval of 44dB.

During the operation of this device the level of audio signal limitation is visualised on the Vumeter (2 of Fig. 1).



Automatic controls of Lmax and Leq (with chart DPC215 OPTIONAL)

The automatic control of the intervention parameters occurs putting jumper of fig.4 in the NORMAL position. The line signal will be like this positioned in input to guide the device intervention.

The default values, present in production, of the parameters Lmax and Leq can be varied by the dipswitch table (9 Fig.1), situated on the back panel near the connector JUMPER CAL. The Lmax value (Fig.dipswitch table) is changeable working on the dipswitch from 1 to 6: each dipswitch set to ON increases the Lmax value according to the table quoted. The Leq value is changeable working on the dipswitch from 7 to 10: each dipswitch set to ON decreases the Leq value according to the table.

Process Key

The TE 2600 is supplied with the button PROCESS (4 of Fig.1) for the exclusion of the device from the reproduction chain.

With the button in the OFF position a direct connection is carried out between the input and output connectors via high quality audio relays.

INPUT AND OUTPUT

For the input and output connection tables, refer to Fig. 2. Both principal audio input and output adopt Cannon XLR connectors ,whilst jack stereo of 6,3 mm are used for auxiliary connections. To guarantee the maximum performance both input and output are balanced without transformers.

In any case, the output stage to crossed coupling indifferently allows for the balanced or unbalanced connection without noticeable level differences. In the case of unbalanced connection the unused stem (2 or 3) must be connected to the stem 1 (GROUND). The output impedance of 70 Ohm allows you without difficulty to guide even long capacitive lines.

On the back panel there is also a jumper to select the function NORMAL or CAL to use when tuning the system.

TUNING THE SYSTEM

After connecting the TE 2600 to the power supply and to the input and output device, set the controls as follows:

1. Position the button PROCESS to ON.
2. Position the button RANGE to 0dB.
3. Position the commutator (switch) COARSE to maximum (+2dBm).
4. Position the release time to an opportune value to obtain the functionality (see parag. Release time).
5. Keeping the jumper CAL disconnected, play a piece of low density music (which produces the lowest Leq level).
6. Adjust the THRESHOLD value to obtain the Leq value desired. Work on the input attenuator until you obtain an attenuation from about 3 to 6dB on the display.
7. Set the Lmax and Leq values on the Dipswitch, if different from those present in the manufacturing (Lmax=104,5dB, Leq=95dB).
8. Insert the jumper CAL in the normal position.
9. Play a piece of high density music (that produces the highest Leq value).



10. Carry out a period of monitoring with different types of music and with relative data printouts, for at least 30 mins. If the minimum values wander excessively or defect from the values given, work on the THRESHOLD, Lmax, Leq controls to get as near as possible to the limits.
The points 5. 7. 8. are considered only if the optional card DPC215 is installed.



SPECIFICATIONS

Input	
Type	Balanced electronic / unbalanced
Impedance	20 kOhm bal / 10 kOhm unbal
Max level	+24dBm
Connectors	XLR (Female) and 6,3mm JACKS
Output	
Type	Balanced electronic / unbalanced
Impedance	140 Ohm bal / 70 Ohm unbal
Connectors	XLR (Male) and 6.3mmJACKS.
Frequency response	16Hz+100kHz +0/-3dB
TDH + Noise	0,005%
IMD (SMPTE)	0,006%
Noise/signal ratio: Reference 0dBm	-90dB with RANGE 0dB (20+20kHz) -106dB with RANGE -20dB (20+20kHz)
Separation between channels (CROSSTALK)	86dB a 10kHz
Rejection report in common mode (CMRR)	>66dB
Nominal gain	0dB
Checking Controls	
Release time	from 150 mSec. to 7 Sec.
THRESHOLD level	from -41dBm to +3dBm
Lmax automatic checks	from 90 dBA to 121.5 dBA
Leq automatic checks	from 82.5dBA to 119.5dBA
Particulars	
Power supply	230V~ 50÷60Hz
Consumption	25VA
Dimensions (LxHxW)	482x44x282mm.
Weight	2,5Kg.

Dipswitch

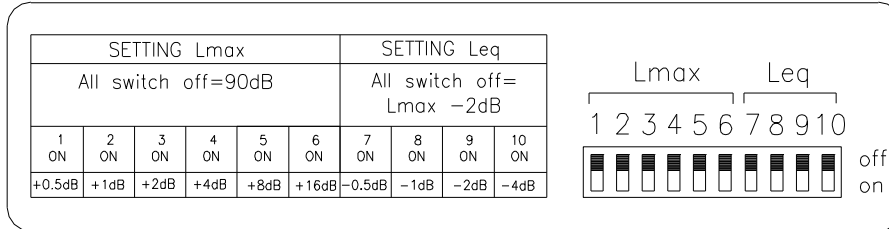
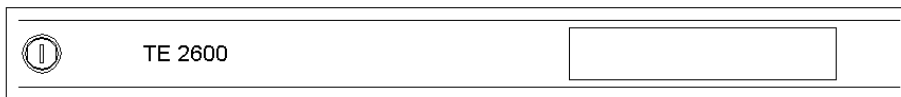
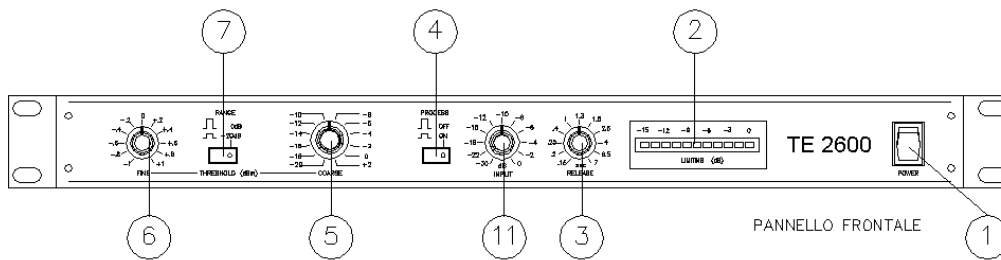


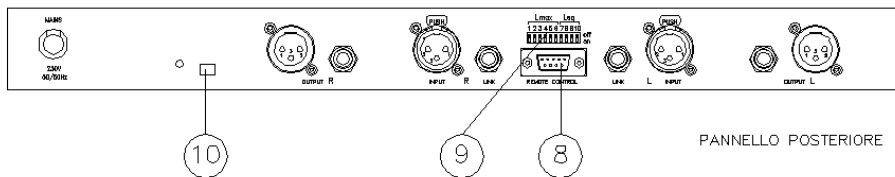
Fig.1



PANNELLO DI CHIUSURA



PANNELLO FRONTALE



PANNELLO POSTERIORE

- | | |
|-------------------------|-------------------|
| 1) POWER SWITCH | 7) RANGE SELECTOR |
| 2) VU METER | 8) JUMPER CAL |
| 3) RELEASE TIME | 9) DIPSWITCH |
| 4) BY-PASS | 10) GROUND LIFT |
| 5) THRESHOLD LEVEL | 11) INPUT GAIN |
| 6) FINE THRESHOLD LEVEL | |

Fig.2
Plan connection of the device and the 3-pin XLR plug

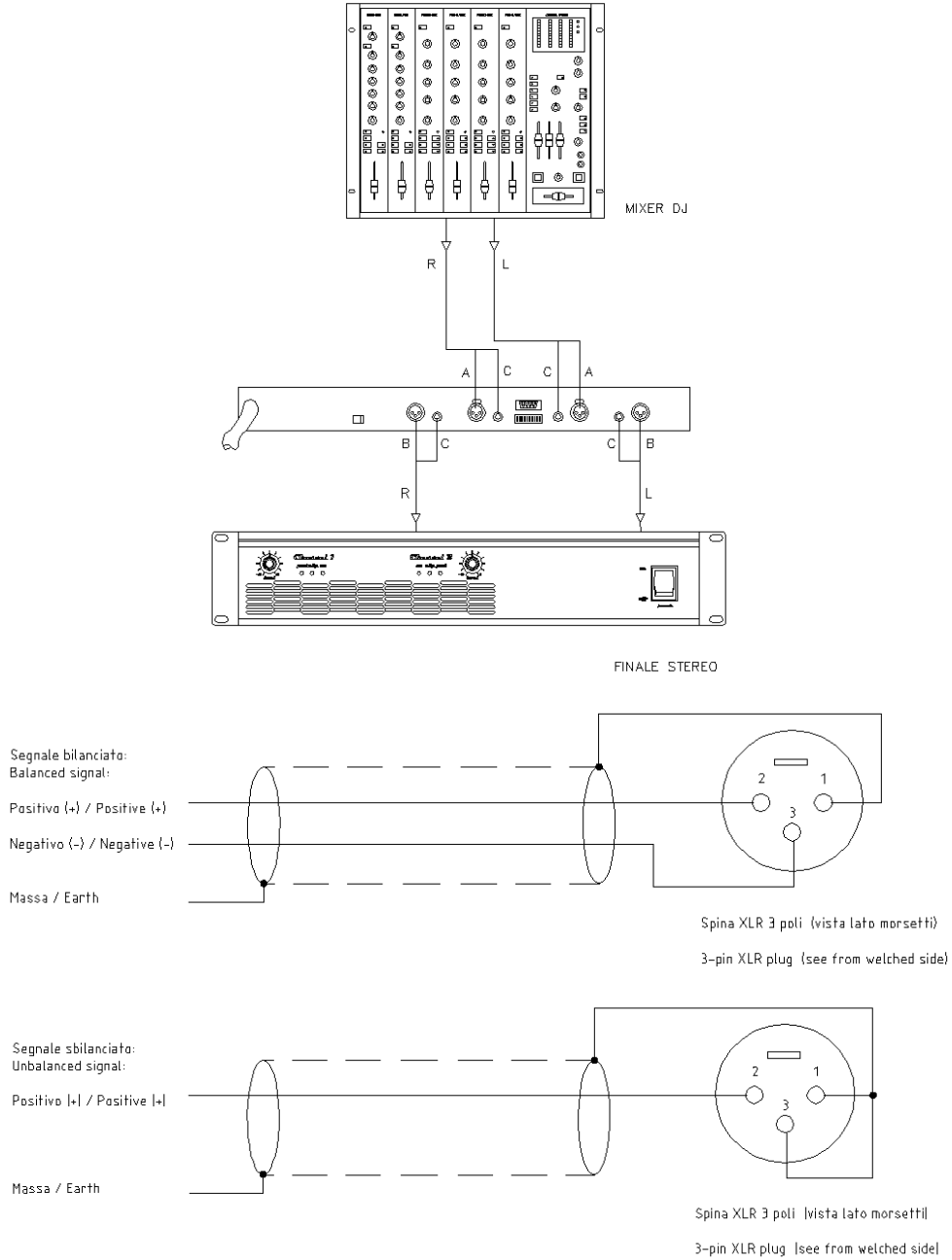


Fig. 3
Optional card DPC215

