

ELECTRONIC LOUDSPEAKER SYSTEM CONTROLLER

TX1

USER MANUAL

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INTRODUCTION

Thank you for purchasing the Tannoy TX1 loudspeaker system controller.

The **TX1** is an advanced electronic controller intended to optimise the performance of Tannoy loudspeaker systems. It can be used in full range mode where it performs equalisation functions, extending the low frequency response of the system significantly. Also, it can be switched to 2-way active mode for applications requiring greater capability at very low frequencies, where it provides a mono sub channel output with optimised high and low pass internal crossovers.

The **TX1** also features :

- stereo operation.
- balanced inputs and outputs.
- individual sub level control.
- high pass filters to protect against hazardous ultra low frequencies.
- industry standard 19" rack-mounting

As well as technical specifications, this manual contains some helpful advice on how to use the controller. Thank you for taking a few minutes to read it prior to installation.

OPERATING INSTRUCTIONS

Preliminary advice and information.

The information contained in this manual is relevant for all **TX1** controllers although versions may vary with different internal adjustments for equalisation or cross-over sections. Each version is dedicated for use with a specific Tannoy loudspeaker system. Make sure that the controller you are planning to use is suitable for your loudspeakers, as degradation of the sound quality and unreliable operation could result from an improper combination.

Please inspect the unit immediately after unpacking for signs of transit damage. In the unlikely event that this has occurred please inform the carrier and the supplier. It is always a good idea to keep the carton for possible future transportation.

Before the TX1 is connected to the mains supply, make sure that the unit is selected for operation with the correct mains voltage. This can easily be checked by looking at the rear panel, where the selected input voltage appears on the voltage selector itself, located near the mains socket. Where necessary, change the selection by sliding the switch to the correct position. The position marked 115V is suitable for any mains voltage from 100V to 120V, whereas the position marked 230V will suit any voltage between 220V and 240V.

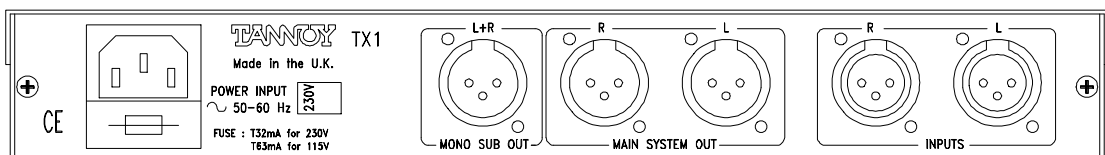


Figure 1. TX1 back panel

Input connections.

As with other devices of its type, the **TX1** controller is inserted in the audio chain between the last link of audio source (mixing console, preamp, CD player, etc.) and the power amplifiers.

The two audio inputs are the 3 pin female XLR connectors on the rear panel, marked **L** for left and **R** for right. On each connector the signal is received between pins 2 and 3 and pin 1 is grounded.

When the device connected at the input (e.g. console) and at the output (i.e. amplifier) are both balanced, there is no hot and cold pin to worry about : the **TX1** is neutral polarity with pin to pin connections (pin 1 to pin 1, pin 2 to pin 2, pin 3 to pin 3). Note that pin 1 connection should be made using the cable shield.

Where a device with an unbalanced output (e.g. hi-fi CD player or preamplifier) is connected to the input of the **TX1**, the signal should be applied to either pin 2 or pin 3 of the input XLR, according to which pin is 'hot' on the amplifier connected at the output. The unused signal pin (3 or 2 respectively) should then be linked to pin 1 for grounding (see Fig. 2).

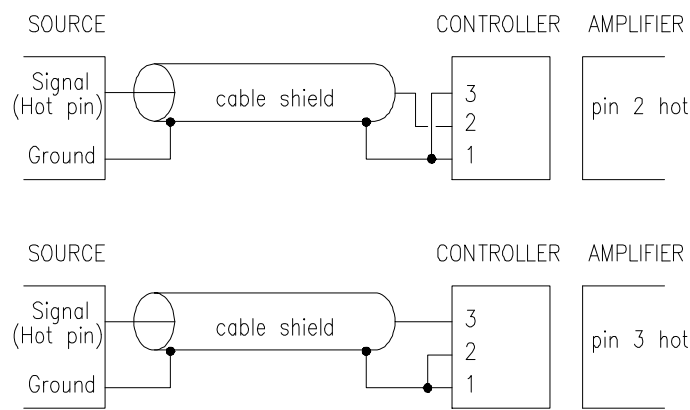


Figure 2. Input connections from an unbalanced source

Output connections.

The audio outputs are the three 3 pin male XLR connectors on the rear panel. Two of them (marked **L** for left and **R** for right) are the output channels for the main system, while the third one (marked **MONO SUB OUT**) is for the optional sub-bass system. On each of these connectors the signal is applied between pins 2 and 3 and pin 1 is grounded.

When devices connected at the input (e.g. console) and at the output (i.e. amplifier) are both balanced, as said previously, the controller is neutral polarity with pin to pin connections (pin 1 to pin 1, pin 2 to pin 2, pin 3 to pin 3).

Where amplifiers with unbalanced inputs are used, the hot pin of the amplifier input should be connected to either pin 2 or pin 3 of the **TX1** output XLR, according to which pin is 'hot pin' on the device connected at the input. The unused signal pin (3 or 2 respectively) should then be linked to pin 1 for grounding.

Note however that the use of amplifiers with unbalanced inputs - rather unusual for professional products - is not recommended, among other drawbacks it will cause the level to drop by 6dB on the outputs of the controller.

Operation with and without a sub-bass system.

The unit should be powered (green LED showing on the front panel) before being connected , or the amplifiers should be turned off, to avoid any switch noise or power surge that could damage the loudspeakers. Similar precautions should be taken when power is switched off.

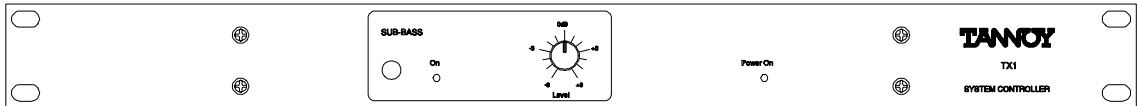


Figure 3. TX1 front panel

The way the **TX1** operates with and without the sub-bass system can be seen on the simplified block diagram of Fig. 4.

When the front panel push-button (left side of the **SUB-BASS** window) is depressed, the main - left and right - channels operate full range with the signal passing through the LF EQ section, resulting in an extension of the bottom end response of the system. This section consists of a 'High Q' 2nd order high pass filter which provides electronic boost where required and also cuts very low frequencies.

When the switch is pushed in, with the adjacent red LED coming on, the LF EQ section is bypassed and the signal on each main channel is re-routed via a high-pass filter at 100Hz designed to provide an optimised acoustic summation for the sub-bass system.

On the sub-bass channel, signals from both left and right inputs are summed together, and the resulting mono signal is low-pass filtered before being sent through the level control section.

To sum up: the push-button should be 'in' when a sub-bass system is used, 'out' when not.

However it should be noted that the sub-bass channel itself is not affected by the position of the switch, which means that it is possible to have the main system operating full range while the sub-bass is also in operation. In that configuration both systems would overlap over a wide bandwidth, with a large phase cancellation. Reversing the polarity on the sub overlapping the main system would on the other hand give an excess of energy in the 60-100 Hz range, but to the detriment of sound accuracy, headroom and sensitivity to spatial alignment of the loudspeakers.

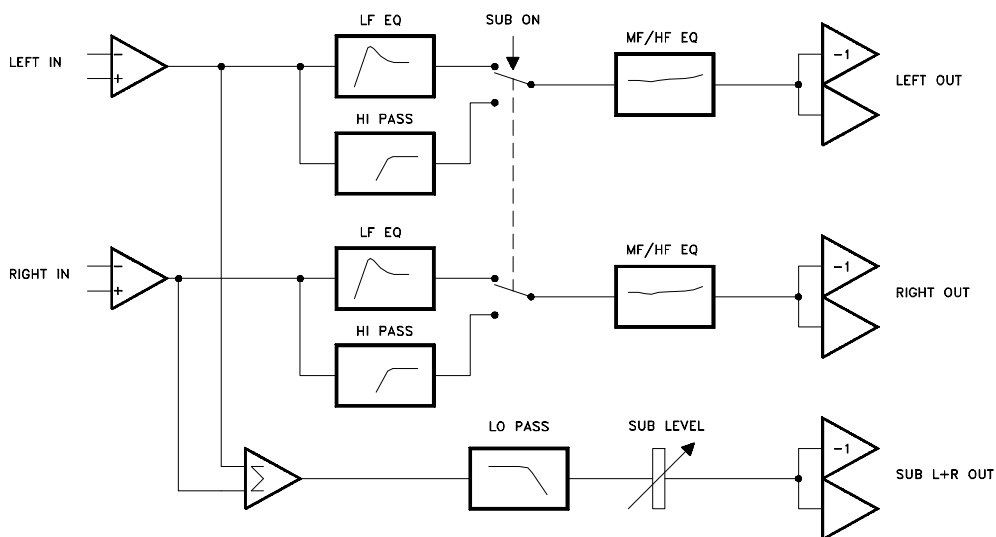


Figure 4. TX1 simplified block diagram.

SERVICING

If servicing is required, it must only be carried out by qualified personnel. Do not remove the top cover as there may be a risk of electric shock.

Fuse replacement.

Disconnect the **TX1** from the mains power supply, and pull back the fuse drawer located at the bottom of the mains input. (A small screwdriver might be helpful.) The fuse drawer has two compartments, one containing the fuse under operation and the other a spare.

Replacement fuses must be of the 5 x 20 mm type, and of the correct rating as indicated on the back of the unit.

Having replaced the fuse push the drawer in fully, until it is secured in its original position.

List of spare parts.

This list does not include any individual electronic parts contained in the unit. For more detailed information please refer to the Service Manual or consult your local dealer or distributor.

PART NUMBER	DESCRIPTION
6481 0299	TX1 User Manual
6883 0110	TX1 Front Panel
6883 0093	TX1 case. Chassis
6883 0095	TX1 case. Top cover

Warranty

No maintenance of the controller is necessary.

All Tannoy electronic components are guaranteed for a period of one year from the date of manufacture, subject to the absence of, or evidence of, misuse, overload or accidental damage.

For further information please contact your dealer or the distributor in your country.

If you cannot locate your distributor please contact :

Customer Services
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Rosehall Industrial Estate
Coatbridge
Strathclyde ML5 4TF
Scotland

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e-mail prosales@tannoy.com

DO NOT SHIP ANY PRODUCT TO TANNOY WITHOUT PREVIOUS AUTHORISATION.

This warranty in no way affects your statutory rights.

TECHNICAL SPECIFICATIONS

Inputs	Two electronically balanced inputs on 3 pin XLR connectors. Input impedance 10 k Ω .
Outputs	Three electronically balanced outputs on 3 pin XLR connectors. (Left, Right and Mono Sub) Output impedance 50 Ω . Max. level +20 dBV.
Hum and Noise	-90 dBV, 20 Hz - 20 kHz unweighted
Controls and Indicators	Power on LED. Sub channel operation switch and LED. Sub level control potentiometer, -6dB to +6dB.
Mains supply	IEC mains connector with integral fuse holder. Voltage selector for 115V or 230V operation (50/60Hz). Fuse type 5 x 20mm, rating T32mA - 250V for 230V operation, T63mA - 250V for 115V operation.
Dimensions	1U high, 19" rack mount width 44.5 mm H x 482 mm W x 150 mm D
Weight	1.7 kg

Tannoy operate a policy of continuous research and development. The introduction of new materials or manufacturing methods will always equal or exceed the published specifications which Tannoy reserve the right to alter without prior notice. Please verify the latest specifications when dealing with critical applications.

Declaration of Conformity

The following apparatus is/are manufactured in the United Kingdom by Tannoy Ltd of Rosehall Industrial estate, Coatbridge, Scotland, ML5 4TF and conform(s) to the protection requirements of the European Electromagnetic Compatibility Standards and Directives relevant to Domestic Electrical Equipment. The apparatus is designed and constructed such that electromagnetic disturbances generated do not exceed levels allowing radio and telecommunications equipment and other apparatus to operate as intended, and, the apparatus has an adequate level of intrinsic immunity to electromagnetic disturbance to enable operation as specified and intended.

The apparatus complies with the Principal Elements of the Safety Objectives of the Low Voltage Directive 73/23/EEC.

Details of the Apparatus: Tannoy Active Crossover/Equaliser
Model Number: TX1

Associated Technical File: EMCTX1

Applicable Standards: EN 50081-1 Emission
EN 50082-1 Immunity
EN 60065:1994

Signed:



Position: Technical Manager
Tannoy Professional

Date: 16th July 1998

For Tannoy Ltd

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