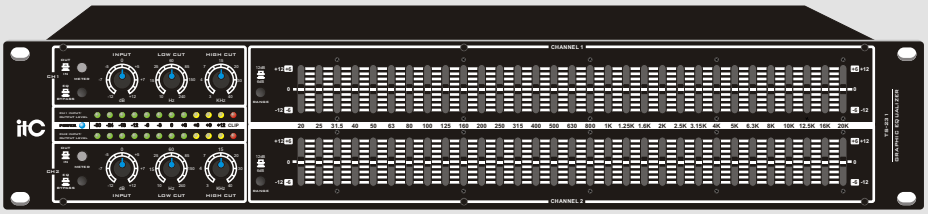
PUBLIC ADDRESS SYSTEM

OPERATION MANUAL

TS-231
GRAPHIC EQUALIZER



Please follow the instructions in this manual to obtain the optimum results from this unit.
We also recommend that you keep this manual handy for future reference.

SAFETY PRECAUTIONS

- Be sure to read the instructions in this section carefully before use.
- Make sure to observe the instructions in this manual as the conventions of safety symbols and messages regarded as very important precautions are included.
- We also recommend you keep this instruction manual handy for future reference.

Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of the potential safety

⚠ **WARNING**	Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.
⚠ **CAUTION**	Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

⚠ WARNING

When Installing the Unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.
- Be sure to replace the unit's terminal cover after connection completion. Because high voltage is applied to the speaker terminals, never touch these terminals to avoid electric shock.
- Be sure to ground to the safety ground (earth) terminal to avoid electric shock. Never ground to a gas pipe as a catastrophic disaster may result.
- Avoid installing or mounting the unit in unstable locations, such as on a rickety table or a slanted surface. Doing so may result in the unit falling down, causing personal injury and/or property damage.

When the Unit is in Use

- Should the following irregularity be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest ITC dealer.
  Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
  - If you detect smoke or a strange smell coming from the unit.
  - If water or any metallic object gets into the unit
  - If the unit falls, or the unit case breaks
  - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
  - If it is malfunctioning (no tone sounds.)
- To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to your nearest ITC dealer.
- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.
- Do not insert nor drop metallic objects or flammable materials in the ventilation slots of the unit's cover, as this may result in fire or electric shock.

⚠ CAUTION

When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so maycause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- When moving the unit, be sure to remove its power supply cord from the wall outlet. Moving the unit with the power cord connected to the outlet may cause damage to the power cord, resulting in fire or electric shock. When removing the power cord, be sure to hold its plug to pull.
- Do not block the ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.

When the Unit is in Use

- Do not place heavy objects on the unit as this may cause it to fall or break which may result in personal injury and/or property damage. In addition, the object itself may fall off and cause injury and/or damage.
- Make sure that the volume control is set to minimum position before power is switched on. Loud noise produced at high volume when power is switched on can impair hearing.
- Do not operate the unit for an extended period of time with the sound distorting. This is an indication of a malfunction, which in turn can cause heat to generate and result in a fire.
- Contact your ITC dealer as to the cleaning. If dust is allowed toaccumulate in the unit over a long period of time,a fire or damage to the unit may result.
- If dust accumulates on the power supply plug or in the wall AC outlet, a fire may result. Clean it periodically. In addition, insert the plug in the wall outlet securely.
- Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. Doing otherwise may cause a fire or electric shock.

An all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.

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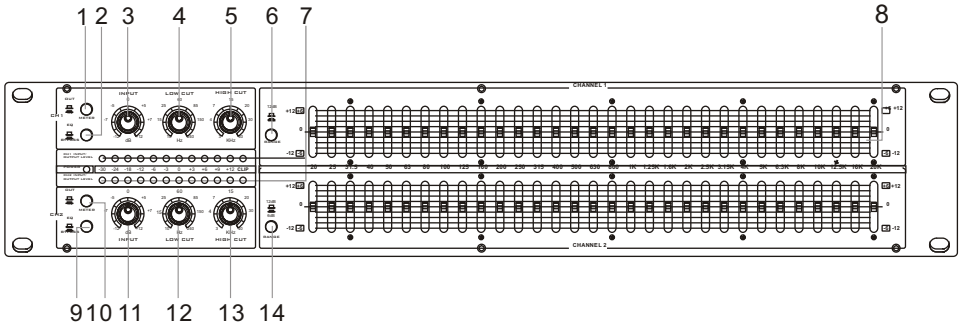
1. FEATURES

1. 1.25 octave frequency fine-tuning 30.
2. The range of adjustable ± 12dB.
3. Arbitrary choice of soundtrack or compensation.
4. Choose low-frequency gain compensation.
5. Visual LED level indicator.
6. The total volume adjustable output.
7. 31 music type excellent stereo graphic equalizer,31 professional stereo graphic equalizer for studio and live use
8. Mono subwoofer output crossover frequency can be adjusted
9. Each channel can be switched on the high cut and low cut filter to get rid of annoying noise, such as local noise and tape hiss etc.
10. 12-digit LED input output level, extremely accurate, with input gain control, so you can control the level of proficiency.
11. Low noise amplifier to operate a beautiful sound.
12. Gold-plated XLR connectors with 6.3 mm stereo jack and servo-balanced inputs and outputs.
13. Shielded toroidal power transformer cores can be minimal noise interference.
14. High-quality components and exceptionally rugged construction ensure.

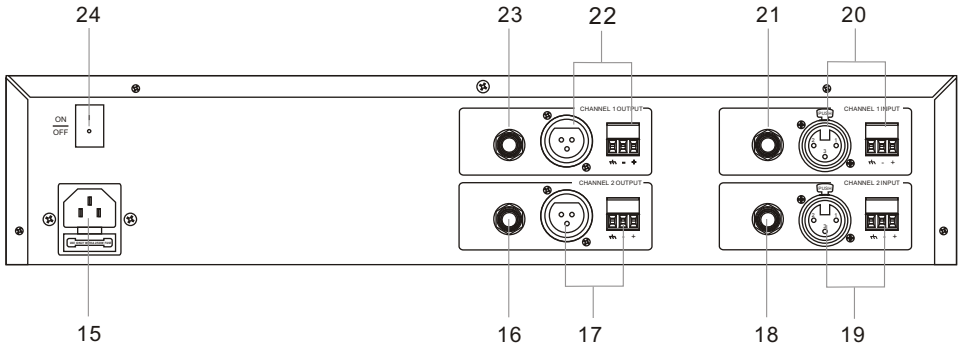
2. NOMENCLATURE AND FUNCTIONS

2.1 Front Panel



1. 1 channel level display selection button
2. 1 signals through regulation with the EQ button
3. A key input signal conditioning
4. Low-frequency selection buttons
5. Frequency selection buttons
6. Gain ± 6dB / ± 12dB
   Button marked: ± 6dB gain adjustment
   Button Lay: ± 12dB gain adjustment
7. Level indicator
8. The band gain adjustment fader
9. 2 signals through regulation with the EQ button
10. 2-way selection button level display
11. 2 keys input signal conditioning
12. 2-way frequency selector buttons
13. 2-way high-frequency selection buttons
14. 2-way gain ± 6dB / ± 12dB
    Button marked: ± 6dB gain adjustment
    Button Lay: ± 12dB gain adjustment

2.2 Real Panel



15. AC~ 220-240V 50/60Hz power connector
16. Unbalanced outputs
17. 2 balanced outputs
18. Unbalanced input
19. 2 balanced inputs
20. 1 balanced input
21. Unbalanced input
22. 1 balanced output
23. Unbalanced outputs
24. Power switch

3. OPERATION

1. Equalizer adjustment method:

- Subwoofer: 20Hz-40Hz, appropriate, powerful sound. Able to control thunder, bass drum, organ and bass sounds. Will enhance the music becomes too turbid.
- Bass: 40Hz-150Hz, a sound basis for part of its energy accounts for 70% of the audio energy is the important component of the performance of musical styles. Appropriate, proper relaxation bass, voice full soft, low voice thin, 150Hz, over time will enhance the sound of nausea, decreased brightness, increased nasal.
- Bass: 150Hz-500Hz, a sound structural elements, the human voice in this position, less than, the concert will be music drowned the sound,sound soft and weak,very vigorous when appropriate to enhance effective and improve the sound intensity and loudness. Will increase when the bass becomes too stiff, 300Hz at the excessive increase 3-6dB, if coupled with reverb, would severely affect the clarity of the sound.
- Alto: 500Hz-2KHz,contains most of the instruments of the low-order harmonics and overtones,is a snare drum and percussion sound characteristics. Appropriate, thorough sound bright, low sound dim. Improve over the phone when you have a similar sound.
- Alt: 2KHz-5KHz, the strings, and the characteristics of sound (pull string in the bow and the string sound of the friction and shoving, playing the pull string music the sound of a finger).Insufficient penetration of the sound down, too strong language when masking syllable recognition.
- Treble: 7KHz-8KHz,is the layering of sound frequency.Excessive increase will piccolo, flute,prominent voices, the language and tone scared increase dental。
- High tone: 8KHz-10KHz

  When appropriate,triangle and fork set high permeability of the metal sense, the rhythm of the sand clock clearly visible.Excessive sound will not improve the natural, easy to burn high-frequency unit.

2. Should be balanced sweet sound:

   150Hz or less (bass) should be plump, soft and elastic;
   150Hz-50Hz (bass) should be deep and powerful are not opacity per;
   500Hz-5KHz (alt) should be bright, blunt and not thoroughly;
   5KHz above (treble) should be thin, smooth and not shrill Park。
   When the flat frequency response: full and natural sound and flexible, clear layer along pleasant garden. Frequency response of multi-peak hours: the rough sound muddy, treble harsh scared, no layering prone to feedback howling sound reinforcement。

3. Characteristics of pitch frequency:

30 ~ 60Hz boring without considerable loudness, the ear is difficult to feel。

60 ~ 100Hz heavy 80Hz can produce very strong near the "heavy feeling" effect,

loudness and will not give a high feeling comfortable, you can give a strong stimulus.

100 ~ 200Hz full

200 ~ 500Hz hum efforts can lead to mental anguish.

500~ 1KHz uncertain as to enhance near 800Hz 10dB, noise will obviously produce a sense,narrow sense.

1K ~ 2KHz translucent 2800Kz luminosity relation near the maximum.

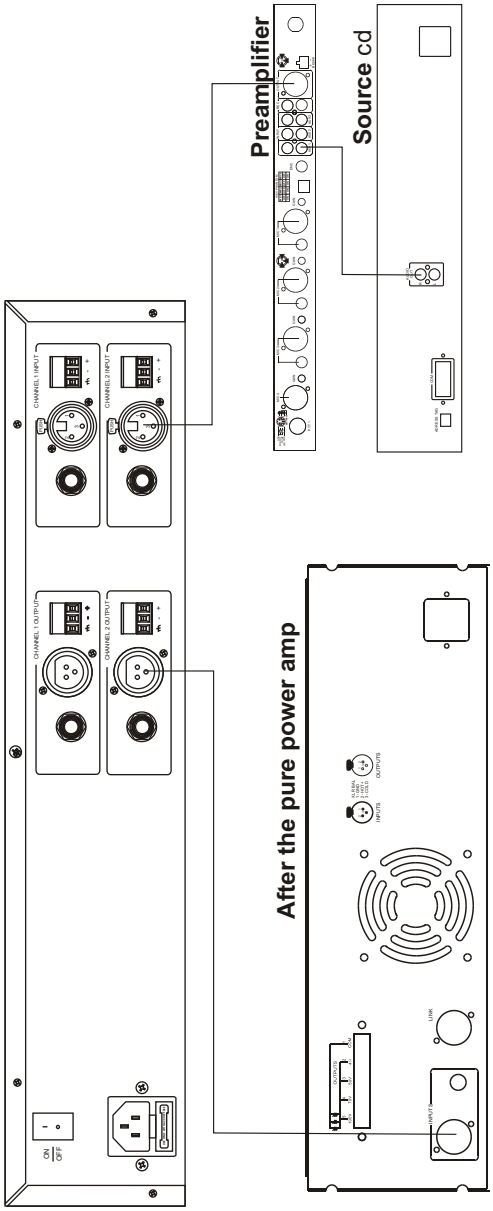
2K ~ 4Kz the formation of sharp 6800Hz wailing, sharp feeling.

4K ~ 8Kz crisp 3400Hz easily cause hearing fatigue.

8K ~ 16Kz slim> 7.5KHz pitch Qingche fine. The development trend of the equalizer

The use of digital filter called the equalizer consisting of digital equalizer, digital equalizer can be made icons EQ, there can be made parametric EQ, you can make both, the EQ, it is not only excellent performance indexes, easy to operate, but also at the same time save a balanced frequency response characteristics of a variety of purposes, be selected for different programs can be stored up to 99 frequency response curve.

4. MACHINE CONNECTION DIAGRAM



5. SPECIFICATIONS

Model	TS-231
Line input	A group of three
Line output	A group of three
Frequency response	20Hz~20kHz (± 3 dB)
Adjustable frequency points	1.25 31 points octave
Gain, attenuation adjustment range	± 12 dB
Power	AC~220-240V 50/60Hz
Power consumption	10W
Machine size	484X128X88
Net weight	3.5Kg

PUBLIC ADDRESS SYSTEM

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