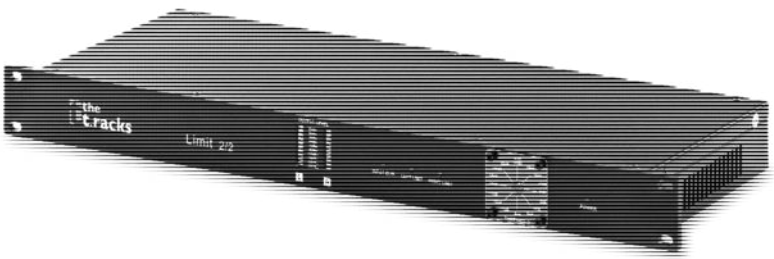
the t.racks

Limit 2/2

limiter



th•mann
MUSIC IS OUR PASSION

user manual

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1 General notes

This user manual contains important information on safe operation of the device. Read and follow all safety notes and all instructions. Save this manual for future reference. Make sure that it is available to all persons using this device. If you sell the device, include the manual for the next owner.

Our products are subject to a process of continuous development. We therefore reserve the right to make changes without notice.

Symbols and signal words

This section provides an overview of the symbols and signal words used in this user manual.

Signal word	Meaning
DANGER!	This combination of symbol and signal word indicates an immediate dangerous situation that will result in death or serious injury if it is not avoided.
NOTICE!	This combination of symbol and signal word indicates a possible dangerous situation that can result in material and environmental damage if it is not avoided.

Warning signs	Type of danger
	Warning – high-voltage.
	Warning – danger zone.

2 Safety instructions

Intended use

This device is intended to be used to limit the dynamics of signals from audio devices and musical instruments. Use the device only as described in this user manual. Any other use or use under other operating conditions is considered to be improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.

This device may be used only by persons with sufficient physical, sensorial, and intellectual abilities and having corresponding knowledge and experience. Other persons may use this device only if they are supervised or instructed by a person who is responsible for their safety.

Safety

DANGER!

Danger for children

Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard!

Ensure that children do not detach any small parts (e.g. knobs or the like) from the unit. They could swallow the pieces and choke!

Never let children unattended use electrical devices.

DANGER!

Electric shock caused by high voltages inside

Within the device there are areas where high voltages may be present. Never remove any covers.

There are no user-serviceable parts inside.

DANGER!

Electric shock caused by short-circuit

Always use proper ready-made insulated mains cabling (power cord) with a protective contact plug. Do not modify the mains cable or the plug. Failure to do so could result in electric shock/death or fire. If in doubt, seek advice from a registered electrician.

NOTICE!

Risk of fire

Do not cover the device nor any ventilation slots. Do not place the device near any direct heat source. Keep the device away from naked flames.

NOTICE!

Operating conditions

This device has been designed for indoor use only. To prevent damage, never expose the device to any liquid or moisture. Avoid direct sunlight, heavy dirt, and strong vibrations.

NOTICE!

Power supply

Before connecting the device, ensure that the input voltage (AC outlet) matches the voltage rating of the device and that the AC outlet is protected by a residual current circuit breaker. Failure to do so could result in damage to the device and possibly injure the user.

Unplug the device before electrical storms occur and when it is unused for long periods of time to reduce the risk of electric shock or fire.

3 Features

The limiter is ideal to protect sensitive amplifier inputs against overloading. The digital signal processors reduce the dynamics of the input signal by an adjustable value. Both stereo channels are processed interdependently and compressed by the same ratio. The channel with the higher dynamic controls both channels.

Special features of the device:

- Fixed values for attack and release time
- A/D and D/A converters with high resolution
- High sampling rate
- Adjustable threshold

4 Installation

Unpack and carefully check that there is no transportation damage before using the unit. Keep the equipment packaging. To fully protect the device against vibration, dust and moisture during transportation or storage use the original packaging or your own packaging material suitable for transport or storage, respectively.

Establish all connections as long as the unit is switched off. Use the shortest possible high-quality cables for all connections.

XLR connections for signal in and outputs

Balanced XLR chassis sockets serve as signal inputs. XLR chassis plugs serve as signal outputs. Drawing and table indicate the XLR pin assignment.

1	Ground, shielding
2	Signal (+)
3	Signal (–)

Phone plugs for signal in and outputs

Drawings and tables indicate the pin assignment for 1/4" phone plugs (unbalanced and balanced).

1	Signal
2	Ground, shielding

1	Signal (+)
2	Signal (–)
3	Ground, shielding

Rack mounting

The unit has been designed for rack mounting in a standard 19-inch rack; it occupies one rack unit.

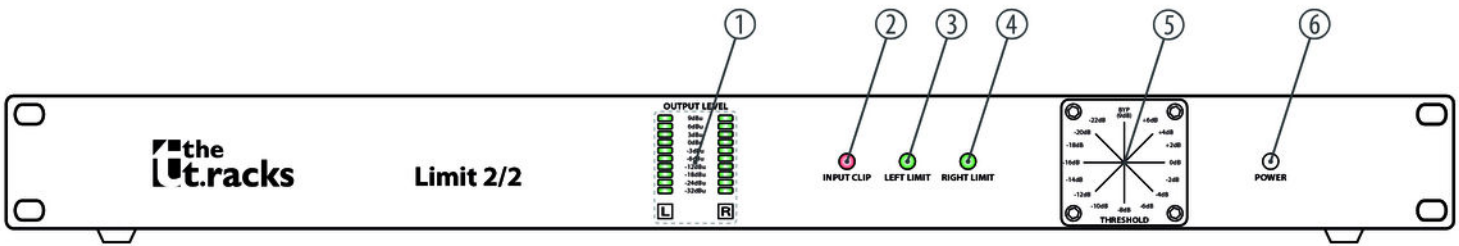
5 Starting up

Connect the line outputs (left and right) of the audio device whose level is to be limited (for example, your mixer) to the inputs of the limiter. Connect the outputs of the limiter to the line inputs of your amplifier.

Connect the limiter to the power supply and switch it on. Test the threshold setting until the amplifier is protected against overloading, but the limiting of the signal dynamics is only as little as possible. To protect your speakers, proceed cautiously from an initially strong limiting towards lower settings. If it is technically possible in your system, please try without connected speakers first. Observe the operating instructions of the amplifier.

6 Connections and operating elements

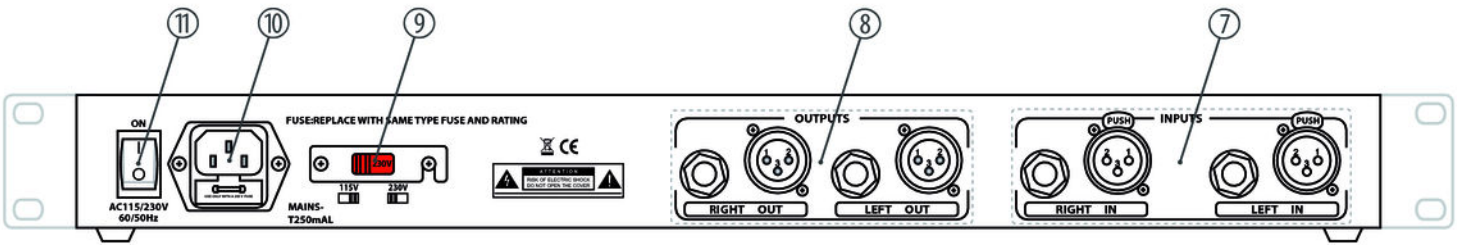
Front panel



1	**OUTPUT LEVEL** The LED chains indicate the output level of the left and right channel.
2	**INPUT CLIP** This LED indicates an excessive input level overloading the input. If this happens, reduce the output level of the connected device.
3	**LEFT LIMIT** Indicates active limiting in the left channel.
4	**RIGHT LIMIT** Indicates active limiting in the right channel.

5	**THRESHOLD** Rotary switch for threshold setting. Before adjusting this value, remove the transparent plastic cover and turn the switch with a suitable screwdriver to the desired value between 9 dBu (bypass, no limiting) and –22 dBu. To protect the switch against unintended adjusting, refit the plastic cover.
6	**POWER** This LED indicates that the unit is turned on.

Rear panel


11
10
9
8
7
ON
AC115/230V
60/50Hz
FUSE:REPLACE WITH SAME TYPE FUSE AND RATING
MAINS-
T250mAL
115V
230V
OUTPUTS
RIGHT OUT
LEFT OUT
INPUTS
PUSH
PUSH
RIGHT IN
LEFT IN

7	**INPUTS** Right and left channel inputs ■ XLR chassis socket ■ 1/4" phone socket (balanced or unbalanced)
8	**OUTPUTS** Right and left channel outputs ■ XLR chassis socket ■ 1/4" phone socket (balanced or unbalanced)
9	Slide switch for mains voltage setting.
10	IEC chassis connector with fuse holder. Always make sure that the slide switch (9) is et to the correct position **before** you connect the mains voltage here.
11	Main switch to turn the device on or off.

7 Technical specifications

Inputs	XLR chassis sockets, 1/4" phone sockets
Maximum input level	+9 dBu
Outputs	XLR chassis plugs, 1/4" phone sockets
Maximum output level	+9 dBu
THD in 'Bypass' mode (–6dbFS)	< 0.01 %
Frequency response, ±0,5 dB	20 Hz…20 kHz
Signal-to-noise ratio	> 103 dBu (in 'Bypass' mode)
Resolution (A/D and D/A conversion)	24 bit
Resolution (internal processing)	24 × 48 bit with 96 bit accuracy for intermediate steps
Attack time	80 µs
Release time	600 ms
Operating supply voltage	115...230 V ~ 50/60 Hz

Power consumption	10.5 W
Fuse	5 mm x 20 mm, 0.5 A, 250 V, träge (bei 115 V) 5 mm x 20 mm, 0.25 A, 250 V, träge (bei 230 V)
Dimensions (W × D × H)	482 mm × 175 mm × 44 mm
Weight	2.5 kg

8 Cleaning

Fan grids

The fan grids of the device must be cleaned on a regular basis to remove dust and dirt. Before cleaning, switch off the device and disconnect AC-powered devices from the mains. Use a lint-free damp cloth for cleaning. Never use solvents or alcohol for cleaning.

9 Protecting the environment

Disposal of the packaging material

For the transport and protective packaging, environmentally friendly materials have been chosen that can be supplied to normal recycling.

Ensure that plastic bags, packaging, etc. are properly disposed of.

Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling. Please follow the notes and markings on the packaging.

Disposal of your old device

This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE). Do not dispose with your normal household waste.

Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.

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