

# User Manual



DSP 4x4 Mini

Controller

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# 1 General information



This document contains important instructions for the safe operation of the product. Read and follow the safety instructions and all other instructions. Keep the document for future reference. Make sure that it is available to all those using the product. If you sell the product to another user, be sure that they also receive this document.

Our products and documentation are subject to a process of continuous development. They are therefore subject to change. Please refer to the latest version of the documentation, which is ready for download under [www.thomann.de](http://www.thomann.de).

## 1.1 Symbols and signal words

In this section you will find an overview of the meaning of symbols and signal words that are used in this document.

Signal word	Meaning
<b>DANGER!</b>	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.
<b>NOTICE!</b>	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
 A yellow triangular warning sign with a black border and a black lightning bolt symbol in the center.	Warning – high-voltage.
 A yellow triangular warning sign with a black border and a black exclamation mark in the center.	Warning – danger zone.

## 2 Safety instructions

### Intended use

This device is intended to be used for amplification, mixing and playback of signals from musical instruments and microphones. 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!**

#### **Risk of injury and choking hazard for children!**

Children can suffocate on packaging material and small parts. Children can injure themselves when handling the device. Never allow children to play with the packaging material and the device. Always store packaging material out of the reach of babies and small children. Always dispose of packaging material properly when it is not in use. Never allow children to use the device without supervision. Keep small parts away from children and make sure that the device does not shed any small parts (such knobs) that children could play with.



#### **DANGER!**

#### **Danger to life due to electric current!**

A short circuit could lead to a fire hazard and risk of death. Always use proper ready-made insulated triple-core mains cable with a safety plug. Do not modify the mains cable or the plug. In case of isolation damage, disconnect immediately the power supply and arrange repair. If in doubt, seek advice from a qualified electrician.



### **DANGER!**

#### **Danger to life due to electric current!**

Within the device there are areas where high voltages may be present. Never remove any covers. There are no user-serviceable parts inside. Do not use the device when covers, safety equipment or optical components are missing or damaged.



### **NOTICE!**

#### **Damage to the device if operated in unsuitable ambient conditions!**

The device can be damaged if it is operated in unsuitable ambient conditions. Only operate the device indoors within the ambient conditions specified in the “Technical specifications” chapter of this user manual. Avoid operating it in environments with direct sunlight, heavy dirt and strong vibrations. Avoid operating it in environments with strong temperature fluctuations. If temperature fluctuations cannot be avoided (for example after transport in low outside temperatures), do not switch on the device immediately. Never subject the device to liquids or moisture. Never move the device to another location while it is in operation. In environments with increased dirt levels (for example due to dust, smoke, nicotine or mist): Have the device cleaned by qualified specialists at regular intervals to prevent damage due to overheating and other malfunctions.



## 3 Features

- Ultra compact 4-Channel DSP
- Inputs: 4 × 1/4" phone socket (balanced)
- Outputs: 4 × 1/4" phone socket (balanced)
- USB connection for control via PC using the supplied software
- Comprehensive setting options for optimal sound
  - Parametric Equalizer
  - Graphic Equalizer
  - High- and low-pass filters
  - Noise Gate
  - Limiter
  - Phase inversion

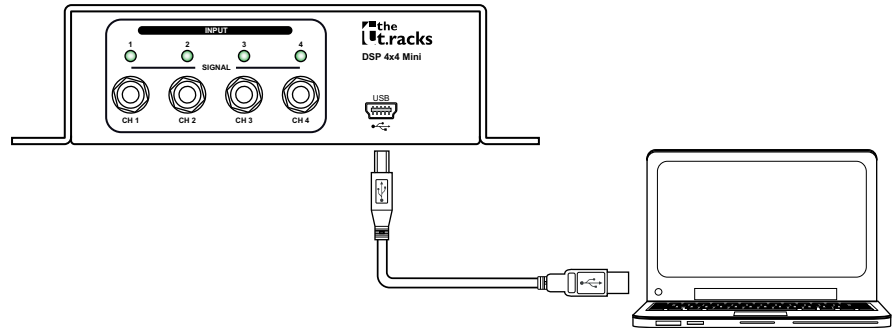
## 4 Installation and starting up

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

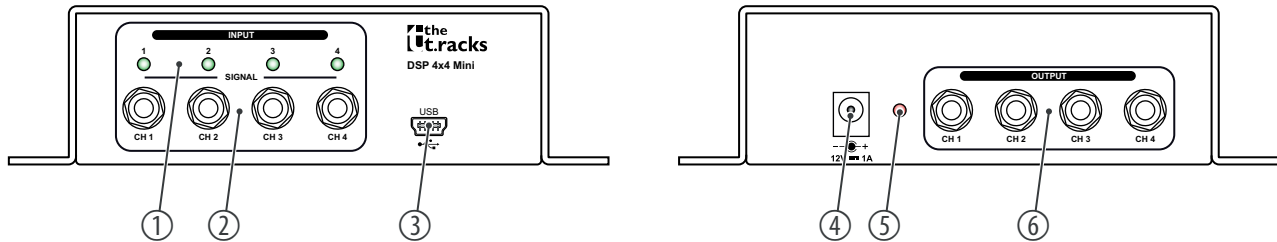
Create all connections while the device is off. Use the shortest possible high-quality cables for all connections. Take care when running the cables to prevent tripping hazards.

### Configuration example

The schematic in the figure shows how the device can be controlled via the USB port of a PC.



## 5 Connections and controls



### Front

- |   |   |
|---|---|
| 1 | LEDs [1], [2], [3], [4]   The LED lights up when a signal is present at the respective input. |
| 2 | Inputs [CH 1] ... [CH 4], designed as 6.35-mm jack socket (mono, balanced).                   |
| 3 | [USB]   USB interface   |

### Back

- |   |  |
|---|--|
| 4 | Connection socket for the power adapter for power supply                         |
| 5 | Indicator LED. The LED lights up when the unit is connected to the power supply. |
| 6 | Outputs [CH 1] ... [CH 4], designed as 6.35-mm jack sockets (mono, balanced).    |

## 6 Operating on the computer

### Install and start the software.

1. ➤ Insert the software CD into the disk drive of your Windows PC and start the installation programme that matches the device version.
2. ➤ Follow the instructions of the installation programme to completion.
3. ➤ Connect your PC to the device via a USB cable and turn on the device.
  - ⇒ The operating system detects the newly added USB device.
4. ➤ Open the PC programme. It automatically detects the connected device.
  - ⇒ In the upper right corner of the programme window the marking '*Online*' appears.

### Exit software

1. ➤ Click on the '*Online*' button in the programme window.
2. ➤ Close the programme window.

**Components of the programme window**

All tabs of the programme window have a similar structure and are divided into the following areas:



1	Tab for selecting a function group
2	Main menu
3	Button for the status of the connection to the PC

4	Display area
5	Control area
6	Buttons for quick access to important presets

### Main menu

Menu item	Meaning
'File'	Loading user presets and saving them on the PC
'Link'	Assignment of input to output channels
'Copy'	Copying parameter settings from one input or output channel to another
'Lock'	Changing device password
'Test Tone'	Setting the internal test tone generator: Pink noise, white noise, sine wave 20 Hz...20 kHz
'Language'	Language selection for the user interface of the programme (English or German)
'About'	Information about the programme version

**Buttons for quick access to important presets**

<b>Range</b>	<b>Meaning</b>
<i>'Address'</i>	Display of the marking of the device
<i>'Preset'</i>	Display of the current user's preset
<i>'Store'</i>	Saving user preset
<i>'Recall'</i>	Recalling user preset

## 'Gain' tab

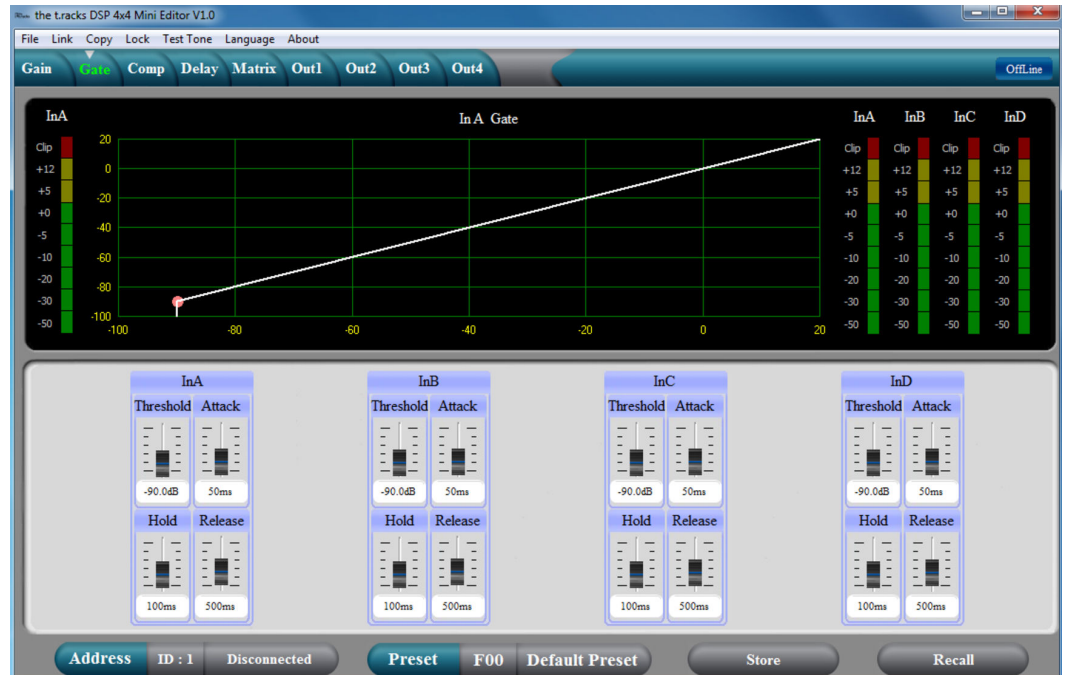




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Range	Meaning
Display area	The waveform of input and output channels is graphically displayed. Use the radio buttons ' <i>Inx</i> ' and ' <i>Outx</i> ' to determine the inputs and outputs to be displayed.
Control area	Drag the faders with the mouse to adjust the levels for the input and output channels. The ' <i>Mute</i> ' button mutes or unmutes the respective channel. The ' <i>Normal</i> ' / ' <i>Inverse</i> ' button inverts the phase of the respective channel by 180° when needed.

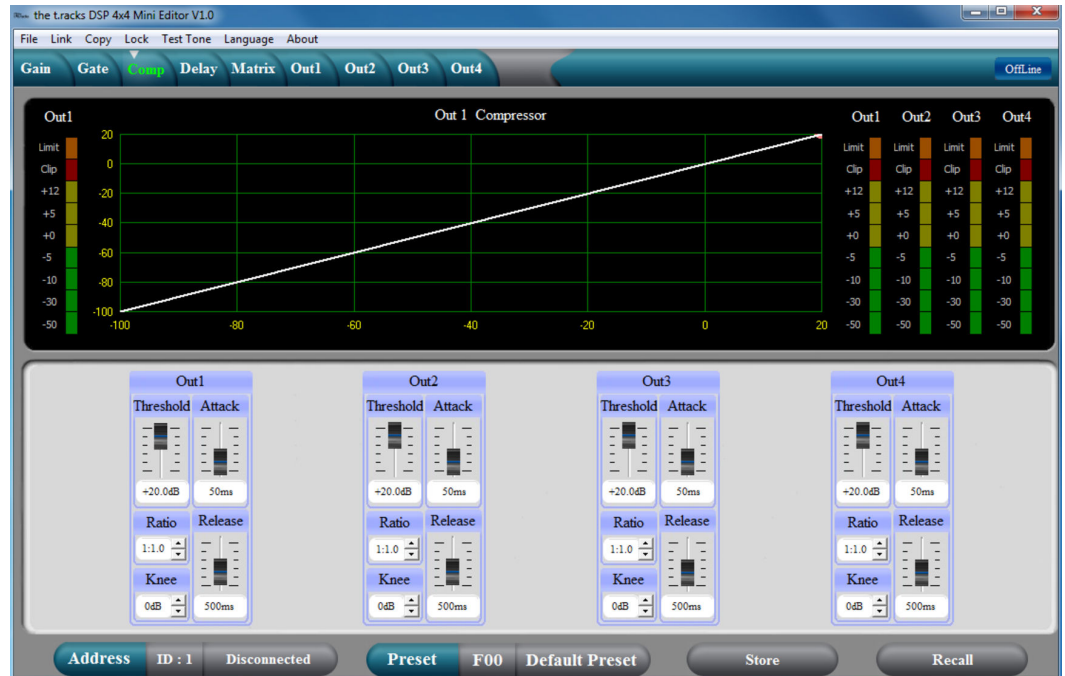
'Gate' tab



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<b>Range</b>	<b>Meaning</b>
Display area	Shows the current settings of the noise gate for the respective channel, with a symbolic level indicator symbol appearing next to it for the input channels. The red dot represents the threshold level at which the noise gate opens.
Control area	Drag the faders with the mouse to set the noise gate parameters for all input and output channels: Threshold, hold, attack, release

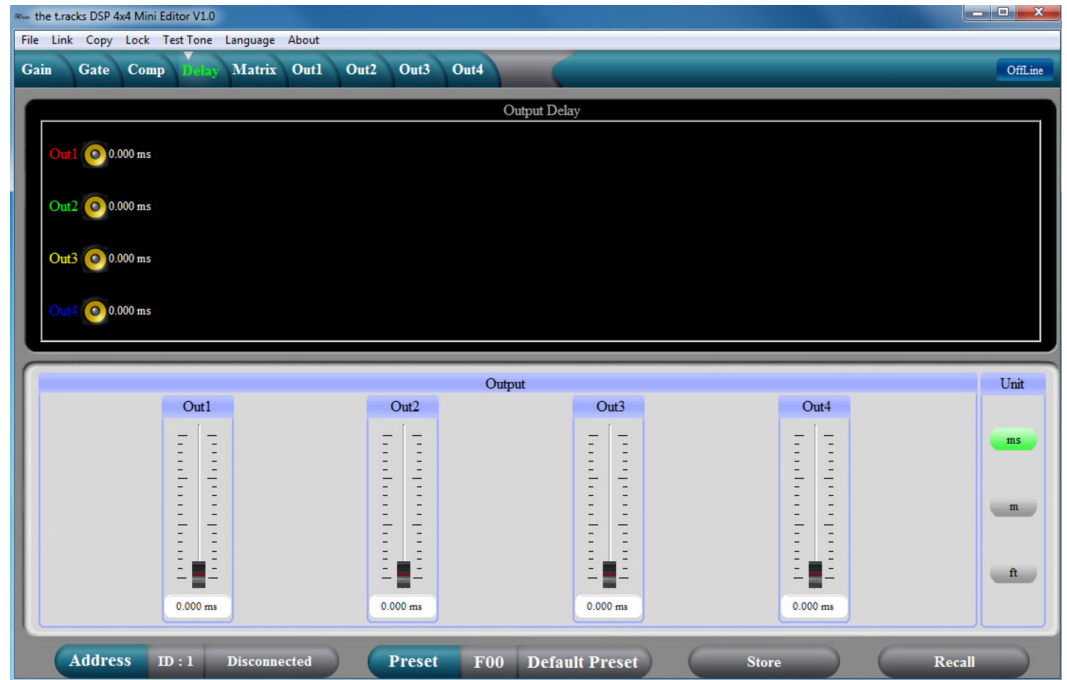
## 'Comp' tab



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Range	Meaning
Display area	Shows the current settings of the compressor function for the respective output channel, with a symbolic level indicator symbol appearing next to it for all output channels. The red dot marks the threshold from which the compressor operates.
Control area	Drag the faders with the mouse to set the compressor parameters for the output channels: Threshold, ratio, knee, attack, release

'Delay' tab



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<b>Range</b>	<b>Meaning</b>
Display area	Shows the set delays for all output channels.
Control area	Drag the faders with the mouse to adjust the delay for the respective channel. In the Unit area, you can select the measuring unit milliseconds (ms), meters (m) or feet (ft).

## 'Matrix' tab





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Range	Meaning
Display area	<p>Shows the current interconnection of input to output channels.</p> <p>Input and output channels can be renamed. Click on a function area (such as <i>'PEQ'</i> or <i>'DELAY'</i>) to open the tab. Here you can enter the corresponding parameters directly.</p>
Control area	<p>With a mouse click you can interconnect each input with each output channel. To each output channel, an input channel or the mix of several input channels can be freely assigned. The green input channels are assigned to the respective output channel. You can adjust the level for each combination of input and output channel.</p>

## 'Out 1' - 'Out 4'



Range	Meaning
Display area	<p>Use the radio buttons <i>'Mag'</i> or <i>'Phase'</i> to switch the diagram from Cartesian coordinates (level vs. frequency) to polar coordinates (angle vs. frequency).</p> <p>Use the radio button <i>'SHOW ALL EQ'</i> to show the parameters for all seven of the frequency bands.</p> <p>The corner points of the equalizer can be moved in the display area with the mouse.</p>
Control area	<p>You can enter the parameters of the parametric equalizer for each input channel and all seven frequency bands (numbered with <i>'PEQ'</i>) in the left part of the window directly as numerical values: Centre frequency, filter quality, slope, filter type. With the <i>'Bypass'</i> button, the equalizer for the respective frequency band and the respective channel can be turned off temporarily.</p> <p>In the middle part of the window (<i>'PEQ Parameter'</i>) you can set the parameters centre frequency, filter quality, and slope using the faders. The setting refers to the frequency band that is highlighted green in the left part of the window.</p> <p>You can select the cut-off frequency and the filter type for the low pass and the high pass filter. Use the <i>'Bypass'</i> button to temporarily turn off the filter.</p> <p>Drag the fader in the right part of the window using the mouse to set the level for the input channel. The <i>'Mute'</i> button mutes or unmutes the respective channel. The <i>'Normal'</i> / <i>'Inverse'</i> button inverts the phase of the respective channel by 180° when needed.</p>

## 7 Technical specifications

Input connections	Power supply	Socket for power adapter		
	USB interface	USB-B		
	Audio signal	Type	4 × 6.3-mm jack socket, balanced	
		Level	+12 dBu	
Impedance		20 kΩ (stereo), 10 kΩ (mono)		
Output connections	Audio signal	Type	4 × 6.3-mm jack socket, balanced	
		Level	+12 dBu	
		Impedance	< 500 Ω	
Frequency response		20 Hz ... 20 kHz -0.3 dB		
Total harmonic distortion (THD)		< 0.008% (1 kHz, 0 dBu)		
Signal-to-noise ratio		> 105 dBu		
Crosstalk		> 70 dBu 20 Hz ... 20 kHz		

Digital signal processing	Digital signal processor	32 bit	
	A/D-D/A converter	24 bit	
	Sampling rate	48 kHz	
Power supply	External power adapter, 100 - 240 V ~ 50/60 Hz		
Operating voltage	12 V $\overline{\text{---}}$ / 1 A, centre positive		
Dimensions (W × H × D)	160 mm × 150 mm × 40 mm		
Weight	0.6 kg		
Ambient conditions	Temperature range	0 °C...40 °C	
	Relative humidity	20%...80% (non-condensing)	

### Further information

2-way stereo	Yes
3-way stereo	No
Digital	Yes
Delay	Yes
EQ	Yes
Limiter	Yes
Computer remote	Yes
Suitable for rack mounting	No

## 8 Plug and connection assignment

### Introduction

This chapter will help you select the right cables and plugs to connect your valuable equipment in such a way that a perfect sound experience is ensured.

Please note these advices, because especially in 'Sound & Light' caution is indicated: Even if a plug fits into the socket, an incorrect connection may result in a destroyed power amp, a short circuit or 'just' in poor transmission quality!

### Balanced and unbalanced transmission

Unbalanced transmission is mainly used in semi-professional environment and in hifi use. Instrument cables with two conductors (one core plus shielding) are typical representatives of the unbalanced transmission. One conductor is ground and shielding while the signal is transmitted through the core.

Unbalanced transmission is susceptible to electromagnetic interference, especially at low levels, such as microphone signals and when using long cables.

In a professional environment, therefore, the balanced transmission is preferred, because this enables an undisturbed transmission of signals over long distances. In addition to the conductors 'Ground' and 'Signal', in a balanced transmission a second core is added. This also transfers the signal, but phase-shifted by 180°.

Since the interference affects both cores equally, by subtracting the phase-shifted signals, the interfering signal is completely neutralized. The result is a pure signal without any noise interference.

### 1/4" TS phone plug (mono, unbalanced)



1	Signal
2	Ground, shielding

### 1/4" TRS phone plug (mono, balanced)



1	Signal (in phase, +)
2	Signal (out of phase, -)
3	Ground



## 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) in its currently valid version. 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.





