

# FD300 Sound Control

## Sound Settings



*Revision as of March 22, 2005.*

User's Guide



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Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

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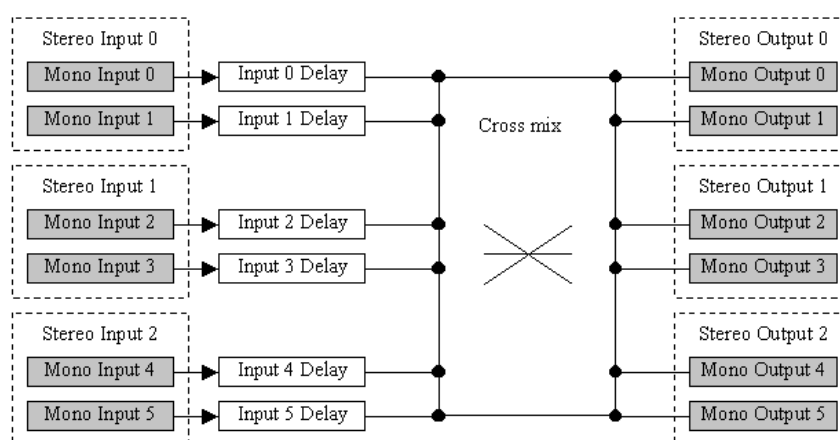
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## Introduction

When creating a multimedia product, it's often necessary to mix sound signals from various sources into one or several signals. For example, to mix music and vocal, in addition, impose on the sound some sounds from other sources etc. The operator's tasks are very diverse. The FD300 Sound Control application provides solving one of them – mixing several audio signals from various sources in real time. Besides, it is possible to set a delay time in milliseconds between the input and output audio signals.

The FD300 board has 6 mono inputs and 6 mono outputs. The inputs and outputs are grouped in stereo pairs.



Sound mixing diagram

For each of the inputs is possible to independently set time of delay, input volume level and input balance, and also direct a sound from an input to any of the stereo outputs. For each output stereo pair is possible to set a volume level and balance.

The audio subsystem of the FD300 board has a standard audio mixer accessible to control through a standard volume level regulator. The mixer provides operating the volume level of the following system audio devices working with the board:

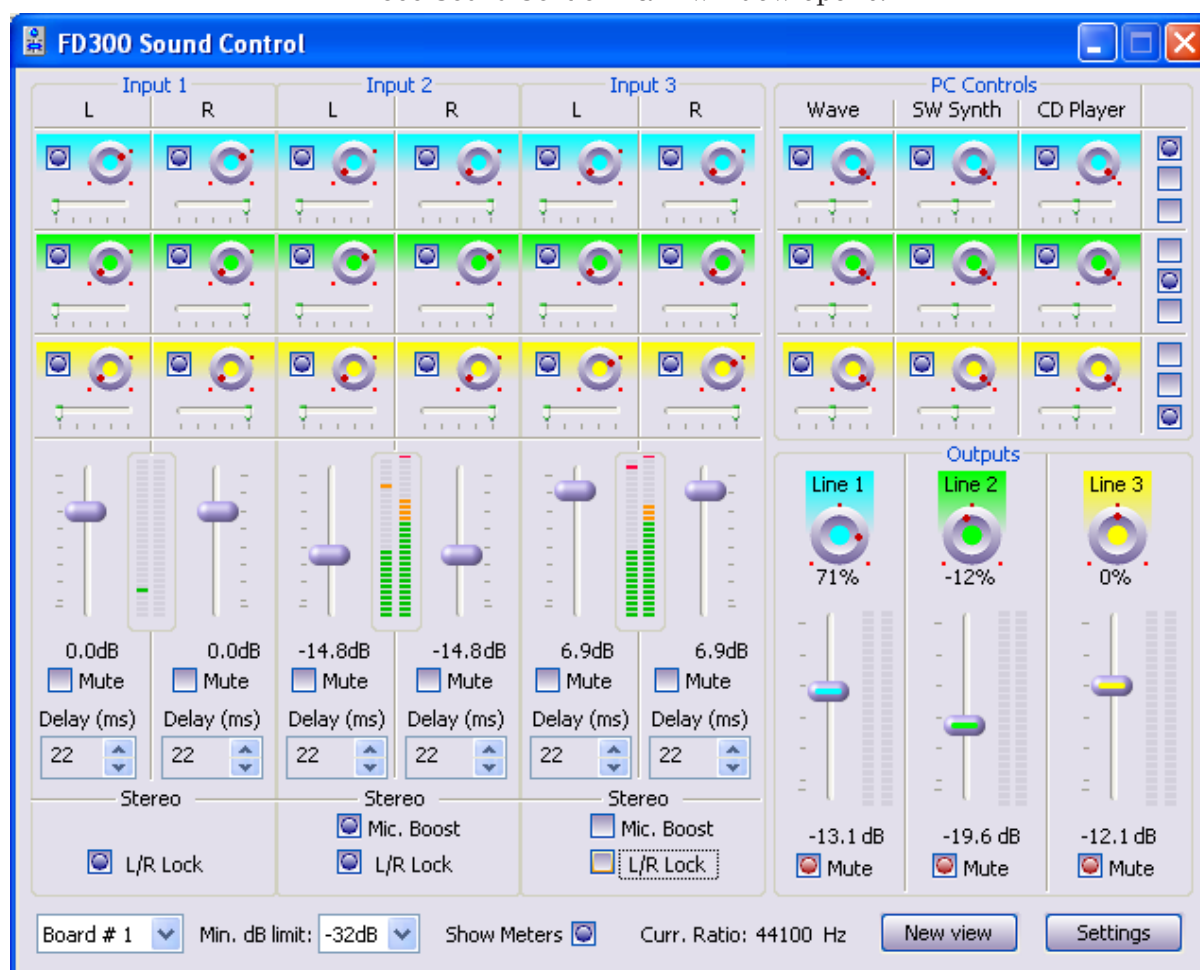
- digital reproduction of a compact disc (CD Player – it is accessible if it is allowed in the system);
- a standard Wave device;
- a program musical MIDI-synthesizer (SW Synth).

The application provides redirecting logical sound streams (from a PC system devices) to different physical outputs.

The user's guide is intended for a user working with an FD300 board sound card and describes the interface of the FD300 Sound Control application.

## Main Window

Launch the FD300 Sound Control application. The FD300 Sound Control main window opens.



The FD300 Sound Control main window

Its appearance approaches a standard audio mixing console used in usual sound studios.



The main window contains 4 areas:

- input signal controls;
- standard audio PC devices controls;
- output signal controls;
- application settings.

Input and output signals are divided into pairs for convenience and designated Input 1, Input 2, Input 3 and Line 1, Line 2, Line 3 (in the Outputs area) accordingly. Inside each pair are left and right signals(L and R). Input and output signal areas contain the following identical control elements (bottom-up):

- the Delay (ms) edit box– a delay in milliseconds (the Input areas only);
- the Mute check box for signal switching on/off;



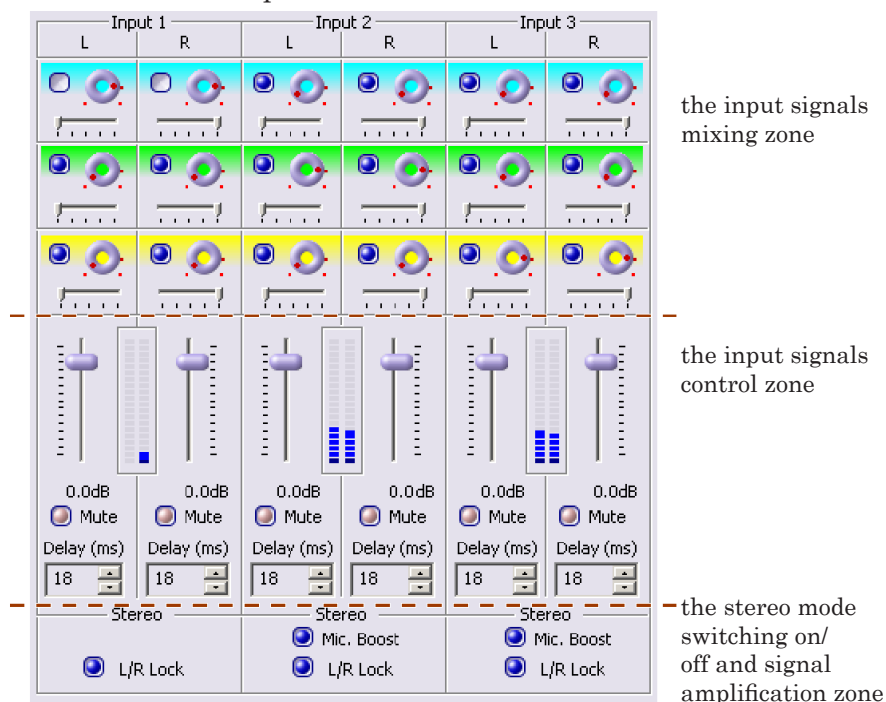
- the vertical volume slider, moves upwards/downwards;
- the horizontal balance slider (the Input areas only);
- the output routing knobs with check boxes (in the Input areas) and balance routing knobs (in the Outputs area). Circular moving of the mouse with the left button pressed makes a change of the value. The further the mouse cursor from the center of the routing knob, the more precise adjustment. When working with the routing knob, the mouse cursor changes its form from  to .

The control elements of the PC standard sound devices are located in the right top part of the main window.

The application settings area is located in the bottom part of the main window. All the areas are described in more detail below.

## Controlling the input signals

The inputs control elements are located in the left top part of the FD300 Sound Control application main window. The Input 1, Input 2 and Input 3 inputs area with the instruction of the control zones location is presented below.

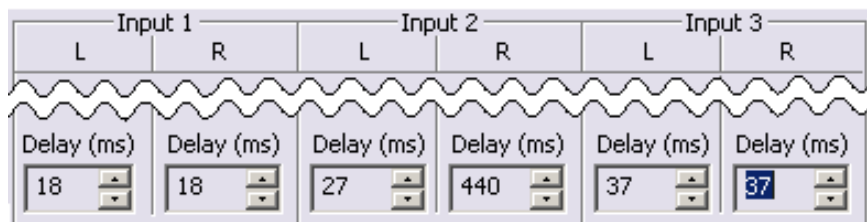


The input signals control zones

- the input signals mixing zone;
- the input signals control zone;
- the stereo mode switching on/off and signal amplification zone.

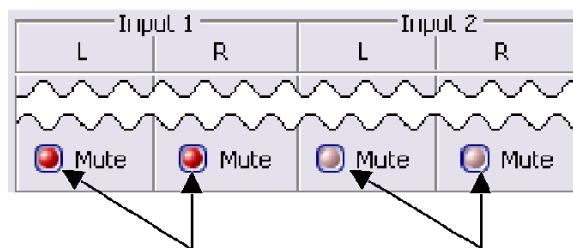
Each of the six mono inputs has the following control elements located in the middle part (the input signals mixing zone) of the input signals area:

- the Delay (ms) edit box (see Figure below). The delay time is measured in milliseconds; the top limit reaches 999 ms (up to 1 second). There is a bottom hardware delay limit to transfer external signals to the output channels. It is impossible to set a delay below the level. It's possible to change the delay value through the keyboard, having entered a value directly into the delay edit box, as well as with the mouse, pressing the buttons located in the right part of the Delay edit box.



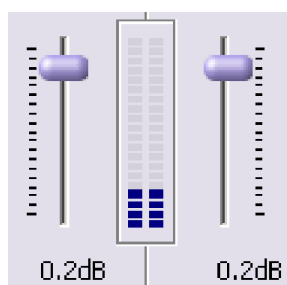
Using a delay for the input signals

- the Mute check box for switching on/off a signal. To exclude an input signal from the mixing process, switch on the corresponding Mute check box with the mouse (see Figure below). To include a signal to the mixing process, switch off the check box.



The input signals switching on/off



- the vertical volume slider. To change the volume level, move it upwards/downwards. The range of the volume level change is from +12 dB to -96 dB, which corresponds to the change of the signal volume level from 4-fold increase to practically complete switching off (see Figure below). A change of the volume level is performed with the mouse. The current volume level is indicated under the volume sliders.

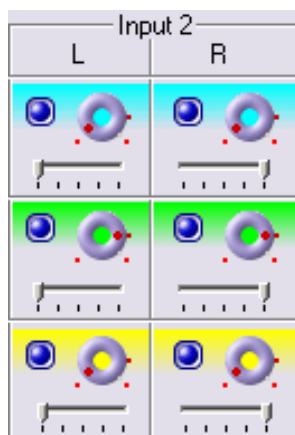


Vertical volume sliders and the indicator of the input level

Note: The application has the ability to change the volume level scale of the volume slider for better usability, for example, when working with loud signals (see Application Settings).

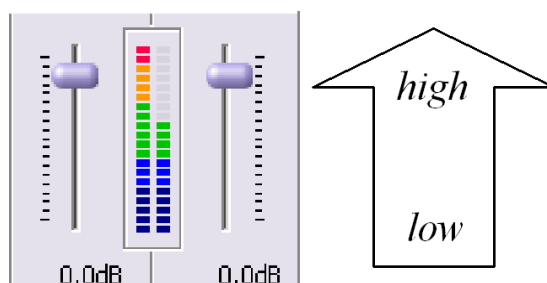
- The horizontal balance slider and three output routing knobs with the check boxes (see Figure below). For example, if the top check box is on, the sound from the selected input is directed to stereo output 1 with the output volume level set with the output routing knob on the right of the check box. The middle (second from above) check box and the output routing knob

operate the sound output to stereo output 2 etc. Circular moving of the mouse with the left button pressed makes a change of the volume level. The further the mouse cursor from the center of the routing knob, the more precise adjustment. When working with the knob, the mouse cursor changes its form from  to .



The input line controls

The volume level indicator of the signal from the corresponding source is located between the vertical volume sliders for the left and right signals (see Figure below). It is possible to judge the input signal power (relative to a standard audio range) by the color palette of the signal power indicator – from a faint signal up to a critical level, when a distortion of the signal is possible.



Colors of the signal power indicator

The Show Meters option in the application parameters settings area in the bottom part of the main window (see Application Settings) is used to switch on the volume level indicators.

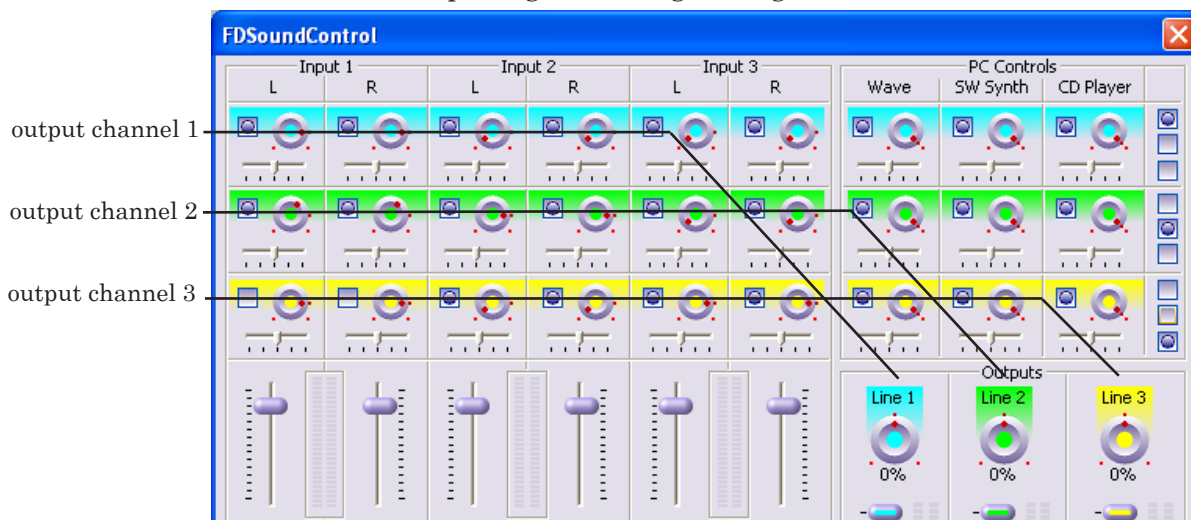
## 1. Mixing the input signals

The required control elements for mixing signals are located in the top part of the input signals area. The FD300 Sound Control application allows you to determine the output volume level for each input signal.

Each of the input signals can be transferred to any of the three output lines. For that, switch on the check box corresponding to the chosen output channel. The color palette allows you to



determine the number of the output channel to which the signal is transferred. The output channel background color is identical to the input signal settings background color.



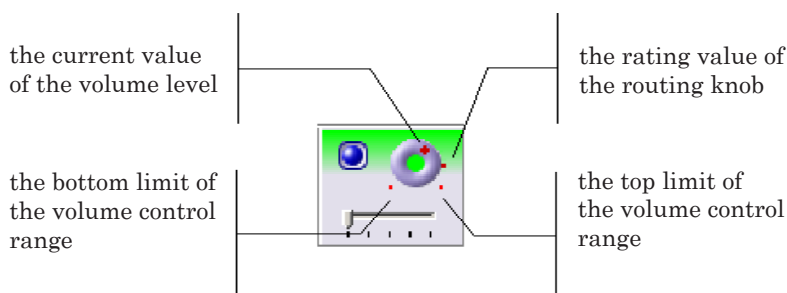
Visual determination of the output channel

At pointing the mouse cursor on a check box, the tool tip with the information of the input signal line number and the corresponding output line number appears.



Transmission of the second right input signal to the second output line.

The volume level control of the input-to-output transmission is performed with the volume routing knob. The range of the volume level change is from +12 dB to -96 dB (from 4-fold increase to practically complete switching off). The points at the bottom of the volume routing knob designate the bottom and top range limit of the volume level change. The point between them (above them) designates a zero (normal) volume level – absence of volume level change.



Volume level change of an input signal at transmission to the output channel.

Circular moving of the mouse with the left button pressed makes a change of the volume level. The further the mouse cursor from the center of the routing knob, the more precise adjustment. When working with the knob the mouse cursor

changes its form from to .

To get information of the external input signal volume level numerical value on the corresponding output, bring the cursor to the routing knob and keep it two seconds.

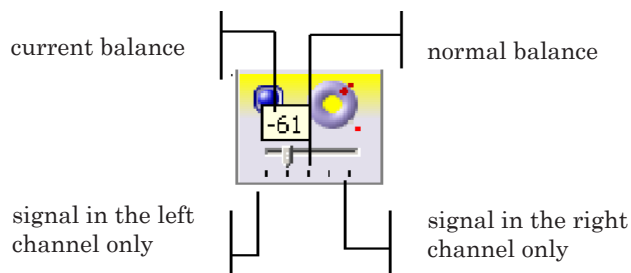


Tool tip about the input signal volume level at transmission to the output channel

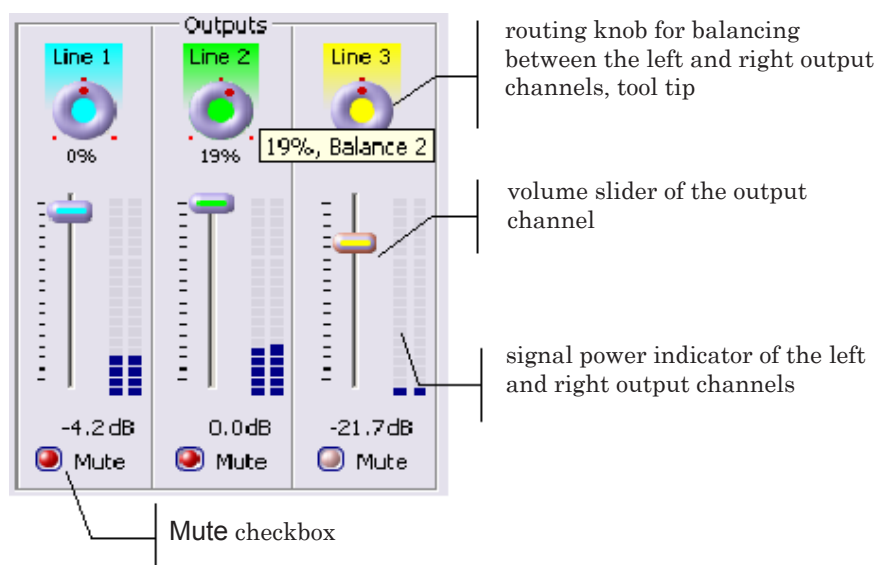
At volume level scale change, the sensitivity of the scale top part setting changes.

Note: The application has the ability to change the volume level scale of the volume slider for better usability, for example, when working with loud signals (see Application Settings).

When transmitting an input signal to the output channel, it is possible to make balancing between the left and right output channels with the balance slider.



Tool tip about balancing between the left and right output channels

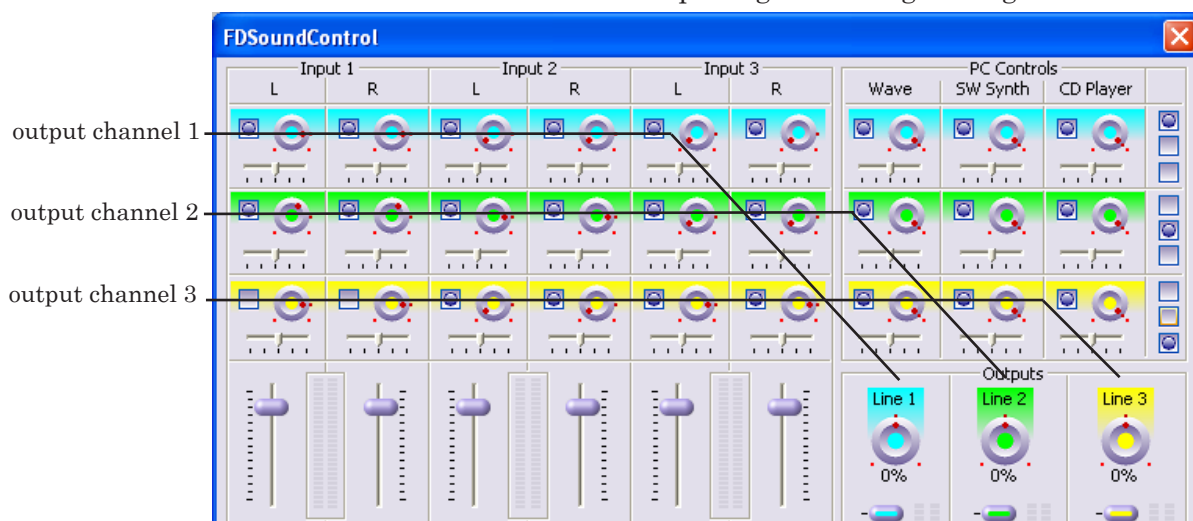


The output signals control

For that, switch on the chosen output channel. Determine its number by the color palette; the output channel background



color is identical to the input signal settings background color.



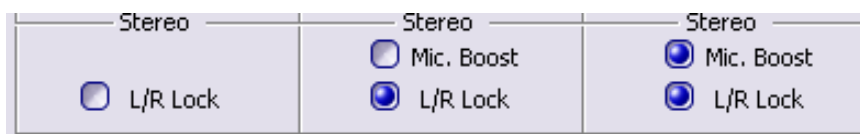
Visual determination of the output channel

Besides, at pointing the mouse cursor on the check box, a tool tip with the information of the input signal line number and the corresponding output line number appears.



## 2. Working with Stereo

A stereo signal can be given on an external input of the FD300 hardware. At that, it is desirable, that the source of the stereo pair be connected both to the left and right channels of one of the inputs (Input 1, Input 2 or Input 3). In that case, the adjustment of the whole stereo pair is made, instead of the right and left signals separately. The L/R Lock check boxes located in the bottom part of the input signals area provide operating the inputs as three stereo pairs.

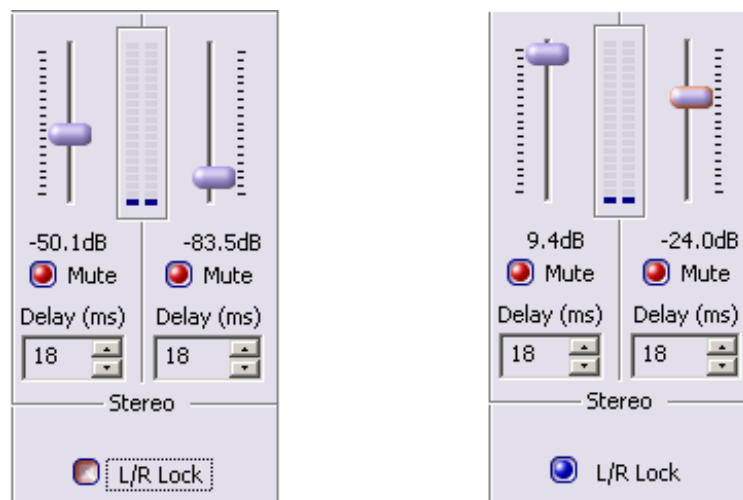


The stereo mode check boxes and microphone amplification

Each pair of the input signals can be used either as one stereo signal or as two independent mono signals. For example, if switch on the L/R Lock option for inputs 1 and 2, the volume level, balance, and delay control parameters will be common for both the inputs, and, accordingly, will change simultaneously.

When changing the stereo pair volume level, the difference between the left and right signals volume level is kept. When the L/R Lock option is off, the left and right mono signals parameters are set independently from each other. It is also

possible to separately perform the stereo pair left and right signals setting, unite them into one stereo pair by switching on the L/R Lock option, and perform the stereo pair setting. At that, the relative difference in parameters between the left and right signals is kept.



Synchronous volume level change in the stereo mode

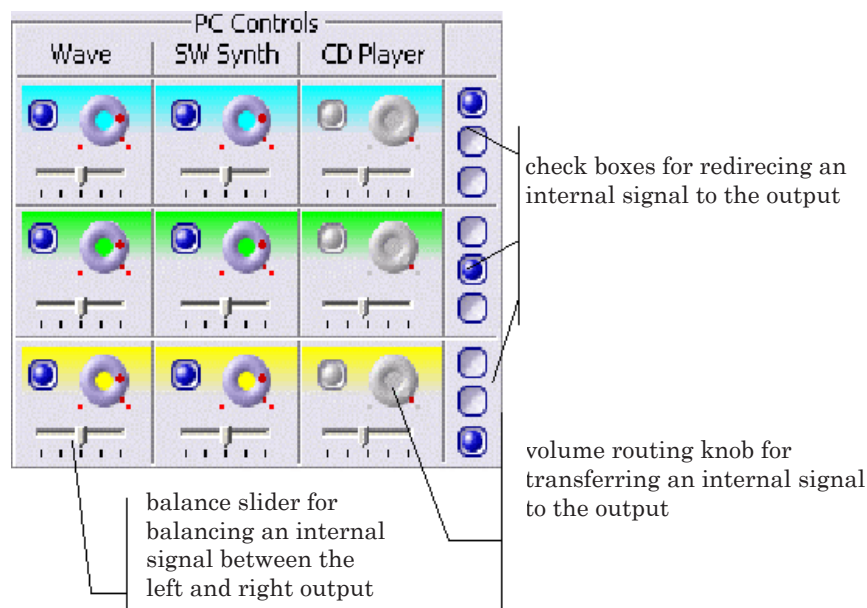
The Mic. Boost check box is used for input signals 3,4 and 5,6. Switching on the option provides performing the hardware amplification of an input signal by 20 dB and working further with the already amplified signal. Such amplification is widely used, for example, when working with microphone. However, it is necessary to consider, that the amplification is possible only for stereo pairs 2 and 3 and for the left and right signals simultaneously.

## Controlling the PC Sound Devices

The FD300 Sound Control application provides mixing sound signals not only from the external sources, but also from the system sound devices of the computer to which an FD300 board is connected (the CD Player, a standard Wave-device, the SW Synth MIDI-synthesizer). Hereinafter, the signals from the listed system devices are named the Internal Input Signals. The sound subsystem of the FD300 board has a standard sound mixer accessible to control by the standard volume regulator.

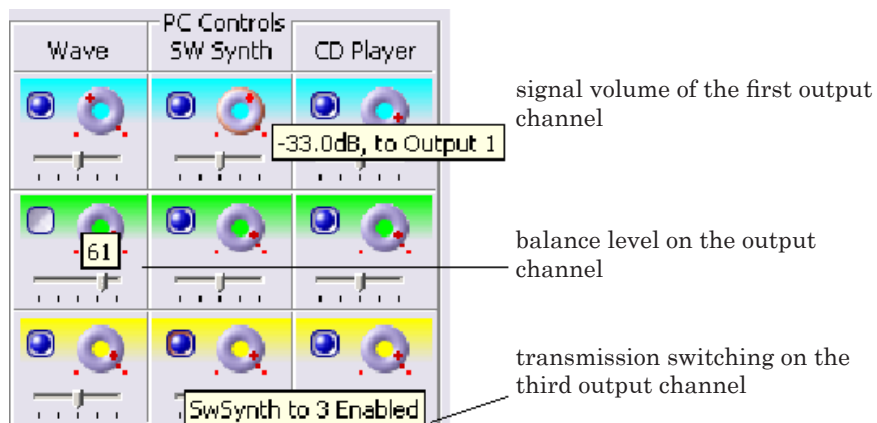
This application provides redirecting the Internal Input Signals to several physical outputs.

In the right top part of the FD300 Sound Control main window, the PC Controls area is located. The control elements of the area allow you to perform balancing between right and left channels, control signal volume (from 0 dB to -96 dB), and also disconnect transmitting a signal from an output channel. On the right of each channel, are located 3 check boxes. They provide redirecting the Internal Input Signals to any of the sound outputs. The check boxes are numbered top-down: the top check box corresponds to the first sound output, middle check box – to the second, bottom – to the third sound output. The default position of the check boxes is shown below.



The PC Controls area

When changing a routing knob position, there is displayed a tool tip giving information about the output channel signal volume level and the number of the channel, for which controlling the signal is being performed.



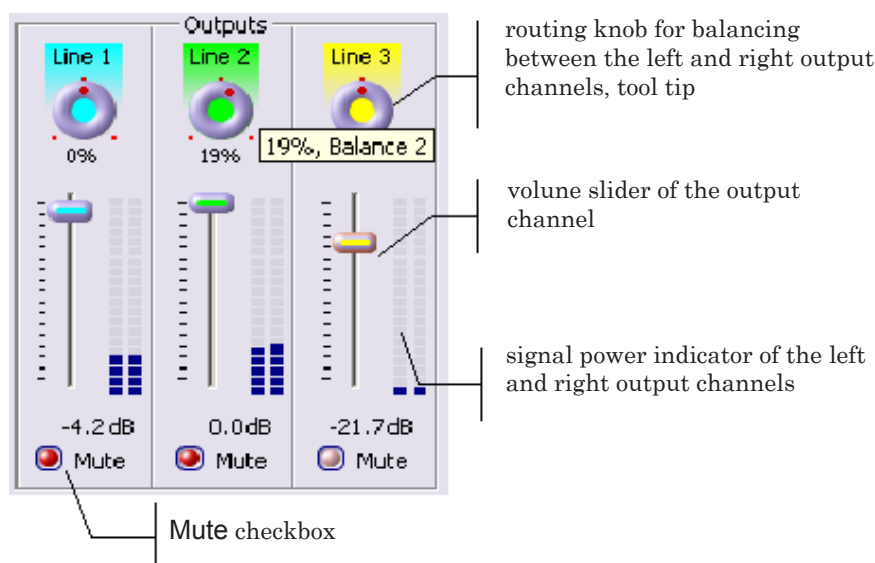
The tool tips

Note: The application has the ability to change the volume level scale of the volume slider for better usability, for example, when working with loud signals (see Application Settings).

## Controlling the output signals

The output signals control elements are located in the right bottom part of the FD300 Sound Control main window. All the enabled input signals are mixed to the output channels.

Working with the output signals is performed as with stereo signals. Setting is performed simultaneously for the left and right channels of a stereo signal. For each output signal it is possible to set a volume level, change balance and completely switch off the signal.



The output signals control

Each of the stereo outputs has the following control elements:

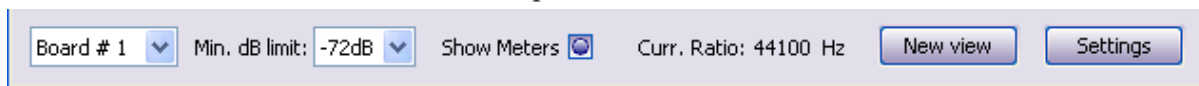
- The Mute check box for switching off the stereo output;
- The vertical volume slider. To change the output volume level, move it upwards/downwards;
- The balance routing knob to control the balance between the right and left outputs.

**Note:** The application has the ability to change the volume level scale of the volume slider for better usability, for example, when working with loud signals (see Application Settings).



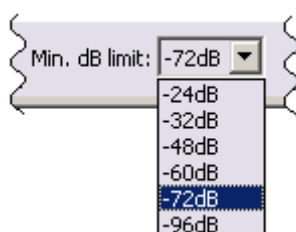
## Application Settings

The FD300 Sound Control application settings area is located in the bottom part of the main window.



The FD300 Sound Control application settings

- In the Board # drop-down list choose the required board number for the further working.
- In the Min. dB limit: drop-down list choose the range of the volume change on all the inputs and outputs.



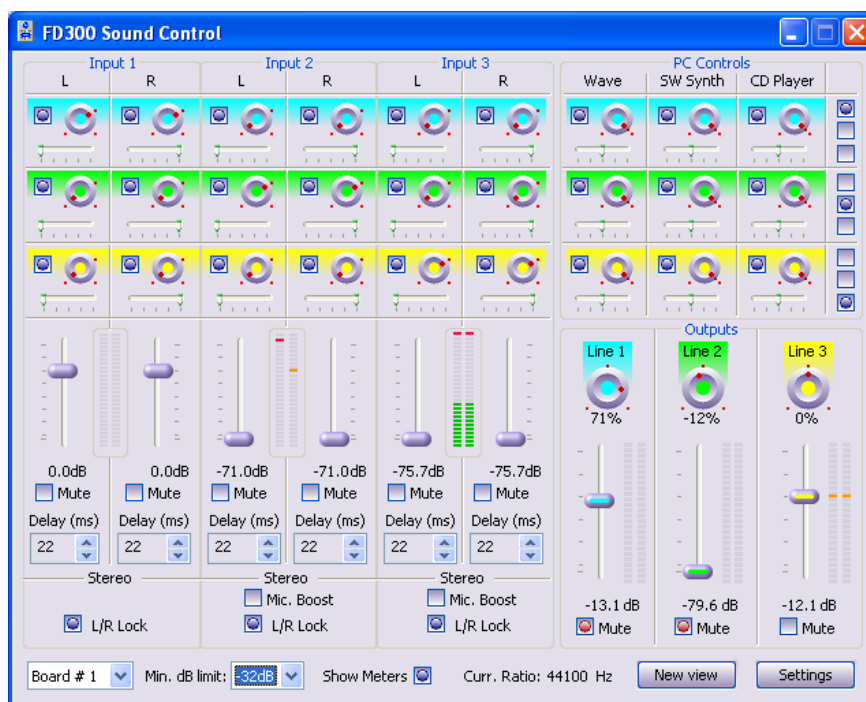
Scaling selection of the volume sliders

The possible range of the signal volume change, admissible in the FD300 Sound Control application – from +12 dB to -96 dB for the external input channels, and from 0 dB to -96 dB for the internal and output channels. But in the course of working arises a need for more exact signal adjustment, especially in the volume top range. For that, choose a new bottom limit of the volume scale in the Min. dB limit: drop-down list. 0 dB corresponds to a maximum volume level – the extreme top position of the slider.

The selection of a new scale bottom limit has an effect on all the volume controls located in the main window, as well as on all the signal power indicators. The vertical volume sliders will move to new positions according to the current volume level and the new scale.



In case the signal volume level sinks below the current scale bottom limit, the volume slider falls to the scale bottom.



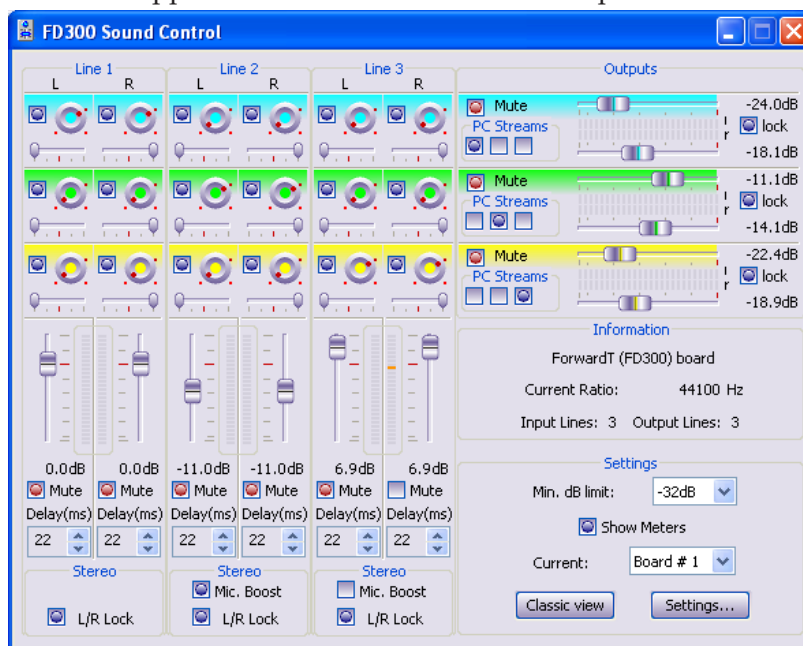
The position change of the volume sliders

At attempt to change the volume level of such a signal, there will be a spasmodic transition of the signal volume level to the working volume scale range, which can be accompanied by a «click» of the signal (spasmodic signal volume change).

- The Show Meters check box switches on displaying the signal volume indicator located alongside the volume level slider on the inputs/outputs.
- The Curr. Ratio: parameter displays the current audio sample rate (in Hz). The sample rate of the input audio signals coincides with the output signals sample rate.



- Clicking the New view button changes the view of the application main window to a compact one.

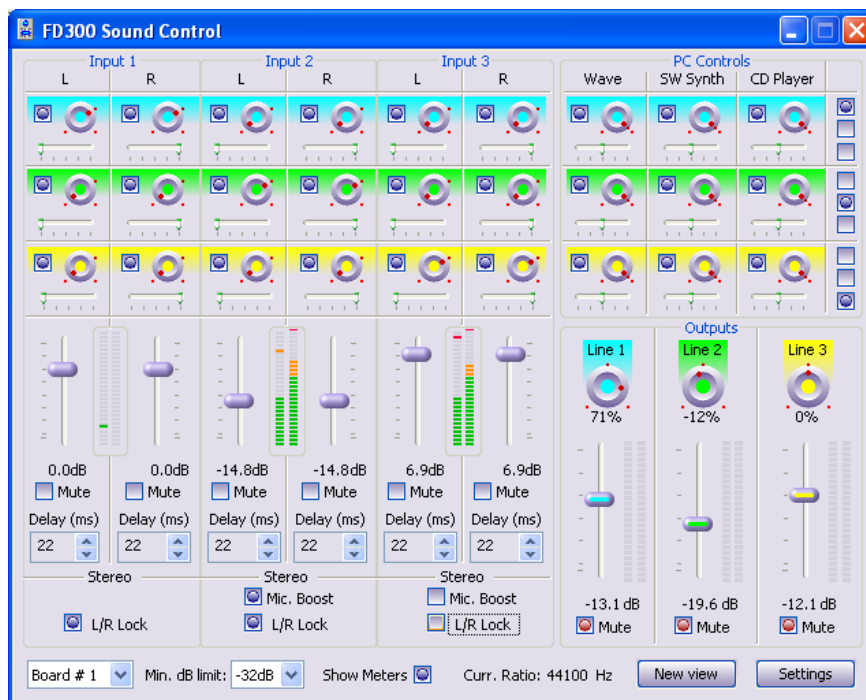


Compact view of the main window

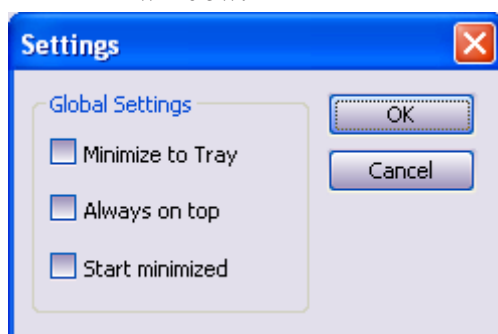
There are displayed only the volume sliders of the input and output channels and the application settings parameters. The reduced view is convenient when the mixing has already been adjusted, and the audio data stream control is being carried out by controlling the signals sound volume level.



- The Classic view button restores the original view of the main window.



- The Settings button is used to open the Settings dialog window.



The Settings dialog

The dialog allows you to choose the required way of displaying the main window on the screen:

- **Minimize to Tray.** In inactive condition the main window is minimized to a pictogram located in the system tray on the right of the task bar.
- **Always on top.** The main window is always displayed atop all the other windows on the screen.
- **Start minimized.** At application start the application is displayed as a button on the task bar.



## Useful Links

<http://www.softlab-nsk.com/forward/docs.html>