

How to do bi-amping with TDAI amplifiers and SDA-2400

The Lyngdorf TDAI integrated amplifiers allow to add one or more SDA-2400 power amplifiers for bi-amping a loudspeaker. This guide explains the right settings to achieve the optimal performance.

Warning:

- *These setups can only be completed with loudspeakers providing separate inputs for high and low frequencies (bi-amping), or high, mid and low frequencies (tri-amping).*
- *The inputs must be completely separated both outside and inside the speakers. Bridges (metal bars or cables) between the speaker binding posts must be removed.*
- *Never connect the speaker outputs of two amplifiers together in any way, as this will cause both amplifiers to defect beyond repair.*
- *Keep all amplifiers switched off when working with speaker cables!*

Using a high-frequency filter for bi-amping with Class-D amplifiers

Using Class D amplifiers like the Lyngdorf SDA-2400 for a bi-amping setup without enabling any filters is generally not recommended. In a Class D amplifier an output filter turns the switching output signal from the amplifier into an analog signal which powers the speaker.

With bi-amping, the amplifier powering the bass has no speaker-load in the high-frequencies, the energy from these frequencies will turn into heat in the output filter. If the components of the output filter break, the speaker drivers will be damaged.

Lyngdorf amplifiers employ a sophisticated design, and we have not yet experienced a broken output filter, but in order to protect the amplifier and speakers from potential damage, you should activate the built-in digital crossover of the TDAI integrated amplifier and remove the high-frequency energy (above 5,000 Hz) from the SDA-2400 power amplifier driving the bass. This adjustment will have no audible side effect.

Go to Setup > Output Setup > set Line Out or Digital Out to Advanced.

Set the > Crossover filter to > Low Pass and the > Frequency to 5000 Hz.

Use of the Digital Crossover filters

Having a digital crossover in the TDAI leads many to want to use this function in their bi-amping setup. However, you should not apply the digital crossover to substitute for the passive crossover network in the loudspeakers, because the crossovers inside the loudspeakers are still active in a bi-amping setup.

While digital crossover filters will allow that each amp only amplifies a given frequency bandwidth, applying another set of crossover filters on top of the speaker's own filters is not recommended.

Setting a signal delay

When using a digital connection from the TDAI to the SDA-2400 power amp, the digital signal will be processed in the SDA-2400, and the resulting signal delay of 0.6 ms (milliseconds) must be compensated for in the TDAI. This will time-align the TDAI with the SDA-2400.

Go to Setup > Output Setup > set Line Out or Digital Out to Advanced.

Set the > Delay (in ms) to 0,6

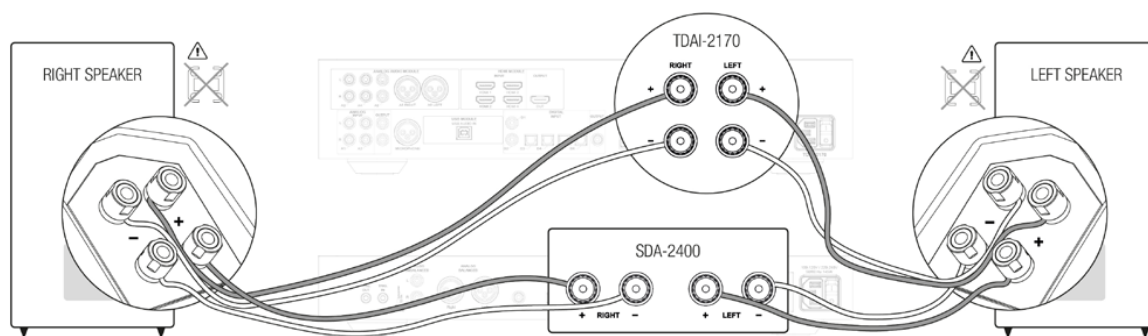
Note: When using an analog connection from the TDAI to the SDA-2400 power amp, no signal delay needs to be set.

RoomPerfect™ to finish the bi-amping setup

Finally, you need to do a RoomPerfect™ calibration, which will further align frequencies and levels. Then you will then enjoy the greatest performance possible from your loudspeakers!

Step-by-step instructions

1. Prepare the speakers by removing the bridges between the two sets of inputs.
2. Run the speaker cable between the TDAI and the “Mid-High” speaker connectors.
3. Run the speaker cable between the SDA-2400 and the “Low” speaker connectors.
4. Set the input selector of the SDA-2400 to the chosen signal input.
5. Connect the TDAI and SDA-2400 to mains power.
6. Set the menu of the TDAI:
 - Advanced Settings > Outputs > Digital Output or Analog, depending on your connection to the SDA-2400 input. Set to Low Pass and set Output Level to -3.0 dB. This will align the output levels of the two amplifiers.
 - When using a digital connection: Advanced Settings > Outputs > Delays – under Digital Output set the Amp. Delay to 0,6mSec.
 - Advanced Settings > Outputs > Low Pass Filter – set to LR, 2nd Order and enter 5000 Hz.
7. Perform a RoomPerfect™ calibration and follow the instructions.



Example of a TDAI-2170 used for high frequencies, and SDA-2400 for low frequencies