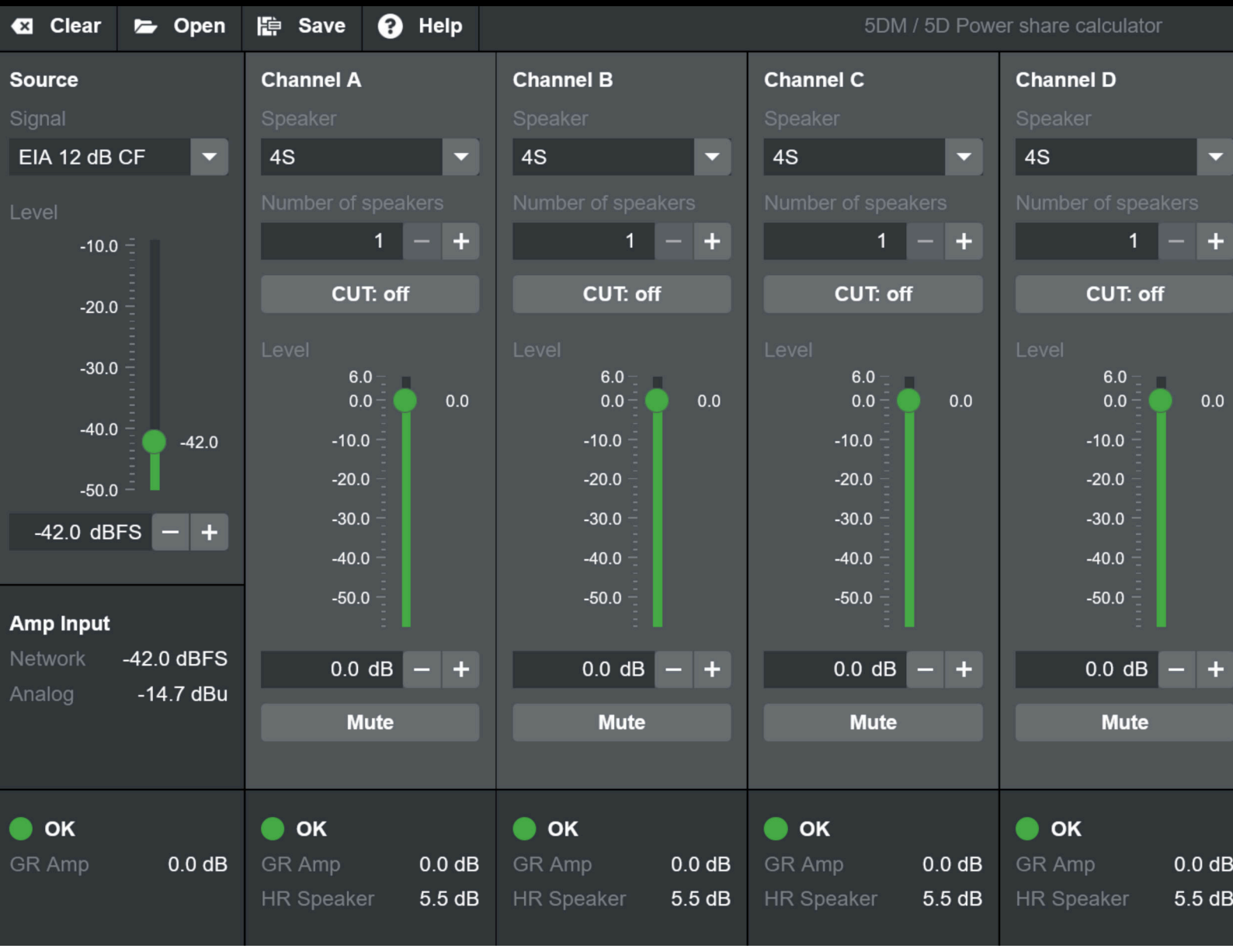
5DM/5D
Power share calculator

Quick guide
1.7 en



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Notes on document version
All previous versions of this document are hereby no longer valid.

Version 1.7:
U-Series loudspeaker added.

Please refer to:
⇒ Chapter "Speaker setup list" on page 6.

General information

5DM/5D
Power share calculator Quick guide

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Keep this document in a safe place so that it is available for future reference.

We recommend you to regularly check the d&b website for the latest version of this document.

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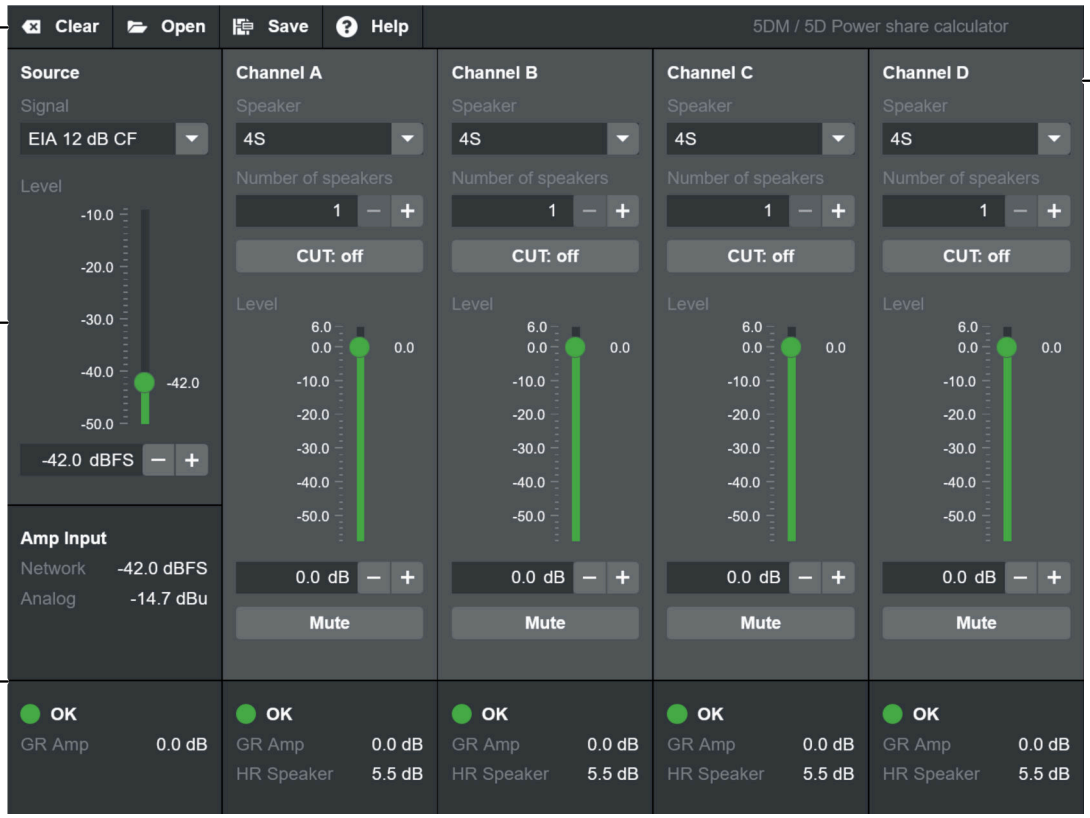
Overview



File menu

Clear: Clears your current settings to default values.

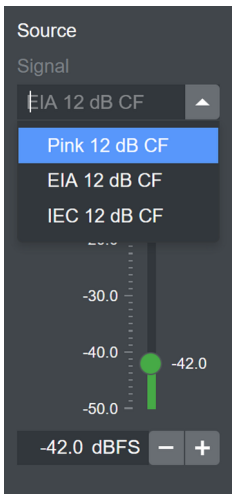
Open: Opens previously stored files from your computer.

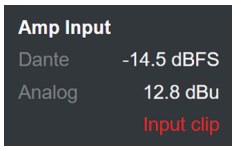
Save: Saves your current settings to your computer.

Help: Launches this document.

Settings

Source settings



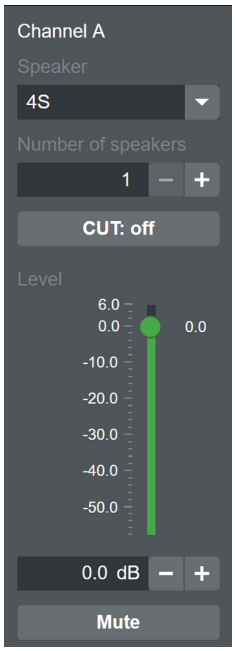


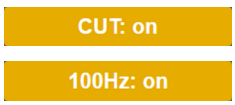
The Source section of the calculator represents the audio source in the application (mixing console, etc.). It offers the choice of three different standardized noise signals, that are commonly used to represent a full-spectrum program signal: **Pink** (program-simulating noise with a power spectral density proportional to 1/frequency), **EIA** (program-simulating noise according to CTA-426-B) or **IEC** (program-simulating noise according to IEC 60268-1), see also ⇒ "Audio spectrum diagram" at the end of this document.
All signals have a crest factor of 12 dB.

Choose your preferred signal from the drop-down list.

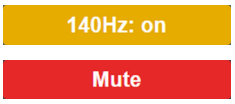
The level of the input signal can be set by moving the fader, typing a value in the input field or using the +/- buttons.
The level represents the RMS value of the signal in the digital domain.
Underneath the source settings, the levels at the inputs of the amplifier are displayed.
If the peak voltage at the analog input exceeds the maximum peak input voltage of the amplifier, a warning is displayed.

Channel settings (Channel A-D)





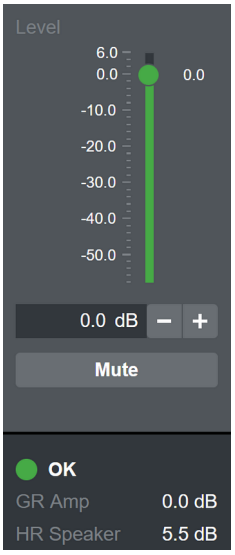
1. First, select available «Speaker» from the drop-down list.
2. Set the number of speakers connected to that output channel by typing directly into the input field or using the +/- buttons.
   Note: The total number of speakers may not exceed "8" because of the minimum allowed impedance connected to the amplifier (4 ohms). Impedance values for the speakers are listed in the ⇒ "Speaker setup list" at the end of this document.
3. Set the filter (CUT, 100 Hz or 140 Hz depending on the selected speaker) according to your preference.
4. Use the Level setting to adjust the relative level of the channels. It can be changed by moving the fader, typing a value directly into the input field or using the +/- buttons.
   Note that the resolution is limited to 0.5 dB, as it is in the real amplifier.



5. Use the mute button to disable a channel (e.g. no loudspeaker connected) or to temporarily remove it from the calculation.

Calculation results (Calculation indicators)

Channels



Each channel features indicators for speaker setup gain reduction, amplifier gain reduction and overall status.

The «HR Speaker» figure displays the amount of headroom with respect to the gain reduction LED on the amplifier / in R1 of the speaker driven by an ideal, infinitely large amplifier. Remember, that the gain reduction LED will turn on at 3 dB of gain reduction. The actual peak reduction will start at about 3 dB of headroom. If the threshold of the gain reduction LED is reached (HR speaker 0.0 dB), the figure is no longer displayed, meaning there is no headroom left.

The «GR Amp» figure displays the amount of applied gain reduction from the amplifier protection features caused by the load on this channel. In this case, the actual properties of the amplifier are taken as reference. 0.0 dB means that the amplifier is operating within its limits. Values greater than 0.0 dB means that the amplifier is compressing the output to protect itself.

The channel status LED displays four different channel states:

1. **OK**
   «OK» indicates that there is speaker headroom still available and the amplifier operates within its limits.
2. **GR Speaker**
   «GR Speaker» indicates that there is no speaker headroom left, meaning the signal is compressed by the speaker protection features, but the amplifier still operates within its limits.
3. **GR Amp**
   «GR Amp» indicates that the amplifier is about to operate beyond its limits and therefore compresses the output.
   «GR Amp» has a higher priority than «GR Speaker», meaning you can have «GR Amp» with or without remaining speaker headroom.
4. **OVL**
   «OVL» indicates that the gain reduction either from the speaker or from the amplifier protection has exceeded 12 dB.

System

The calculator also features indicators for the amplifier gain reduction and status of the combined load.

The «GR Amp» figure of the system displays the amount of applied gain reduction from the amplifier protection features caused by the combined power load of all channels. 0.0 dB means that the amplifier is operating within its limits. Values greater than 0 dB mean that the amplifier is compressing the output to protect itself.

The system status LED displays three different states:

1. OK
   «OK» indicates that the combined power requirement of the channels is within the limits of the amplifier.
2. GR Amp
   «GR Amp» indicates that the combined power requirement of the channels exceeds the limits of the amplifier and the output is therefore compressed.
3. OVL
   «OVL» indicates that the gain reduction from the amplifier protection has exceeded 12 dB.

Result interpretation

If all states are OK (green LEDs), the simulated configuration operates within the limits of the amplifier and within the limits of the loudspeakers.

If the system status is OK (green), but one or more channels show «GR Speaker» (yellow), the simulated configuration operates within the limits of the amplifier, but is at or beyond the limits of the loudspeakers.
This also means that you have reached the maximum SPL from the loudspeakers and it is identical to the maximum SPL achievable with an ideal, infinitely large amplifier.

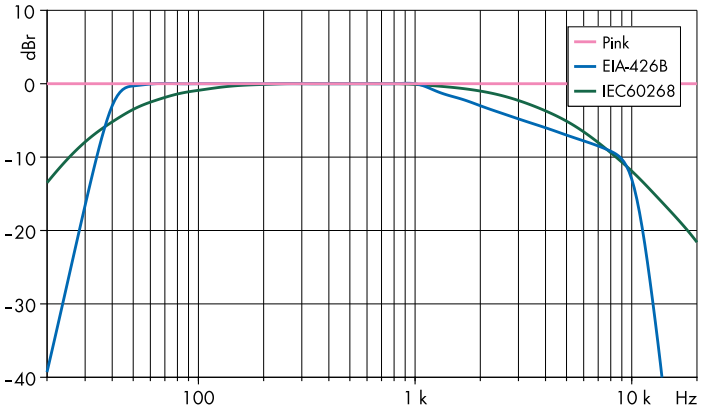
If the system status or any of the channel statuses is «GR Amp» (yellow), the simulated configuration exceeds the capabilities of the amplifier.
The «GR Amp» figures indicate the loss in maximum SPL compared to an ideal, infinitely large amplifier.

If any status is «OVL», the simulated configuration is way beyond the capabilities of the amplifier or the loudspeakers.
Review your settings, especially the input level and the number of speakers per channel.

Best practice

1. First, configure your channels (Speaker, number of Speakers, Filter (switch), relative Level and Mute).
2. Select your preferred simulation signal and adjust the source level to reach the desired headroom of the speakers, depending on your application and personal preference. We recommend between 3.0 dB (start of peak compression) and 0.0 dB (GR LED on).
3. Check the channel and system status and compare the results to chapter "Result interpretation".
4. If necessary, re-adjust the channel levels, number of speakers or mutes.
5. Save your settings to be able to compare different setups.

Audio spectrum diagram



Speaker setup list

Speaker	Impedance (ohms)	Max. cabinets per channel*	Max. SPL**
4S	16	4	115 dB
42S	24	6	117 dB
44S	16	3	123 dB
5S	16	3	118 dB
8S	12	1	127 dB
10S/10A	12	2	130 dB
10S-D/10A-D	12	2	130 dB
10AL/10AL-D	12	2	133/132 dB
12S-SUB	8	1	127 dB
B8-SUB	8	2	122 dB
B10-SUB	6	1	127 dB
16C	12	2	122 dB
24C	12	2	126 dB
24C-E	12	1	128 dB
E0	16	3	117 dB
E3	16	2	123 dB
E4	16	4	115 dB
E5	16	3	117 dB
E6	20	4	123 dB
E8	12	2	129 dB
E12X-SUB	8	1	127 dB
E15X-SUB	8	1	130 dB
T10 PS	16	2	130 dB
T10 Arc	16	2	132 dB
T10 Line	16	2	132 dB
T-SUB	8	1	130 dB
U3	12	2	128 dB
U5	8	2	133 dB
U7	6	1	136 dB

* Depends on total number of loudspeakers per amplifier.

** 1 m, free field, Max. SPLpeak, test signal: pink noise with crest factor 4.

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