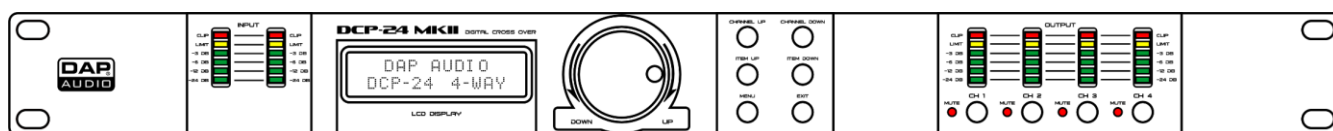


DAP

USER MANUAL



ENGLISH

DCP-24 MKII Digital Cross Over V2

Product code: D2083

Preface

Thank you for purchasing this DAP product.

The purpose of this user manual is to provide instructions for the correct and safe use of this product.

Keep the user manual for future reference as it is an integral part of the product. The user manual shall be stored at an easily accessible location.

This user manual contains information concerning:

- Safety instructions
- Installation and operation of the device
- Intended and non-intended use of the device
- Maintenance procedures
- Troubleshooting
- Transport, storage and disposal of the device

Non-observance of the instructions in this user manual may result in serious injuries and damage of property.

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1. Introduction

1.1. Before Using the Product



Important

Read and follow the instructions in this user manual before installing, operating or servicing this product.

The manufacturer will not accept liability for any resulting damages caused by the non-observance of this manual.

After unpacking, check the contents of the box. If any parts are missing or damaged, contact your Highlite International dealer.

Your shipment includes:

- DAP DCP-24 MKII Digital Cross Over
- USB cable (1,5 m)
- AC power adapter (6 V, 800 mA)
- User manual

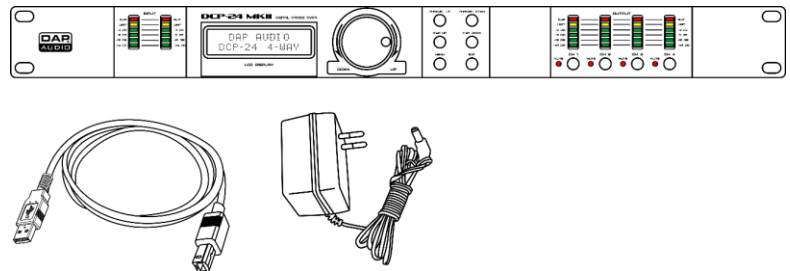


Fig. 01

1.2. Intended Use

This device is intended for professional use as a digital crossover. It is suitable only for indoor installation. It is not suitable for households.

Any other use, not mentioned under intended use, is regarded as non-intended and incorrect use.

1.3. Text Conventions

Throughout the user manual the following text conventions are used:

- Buttons: All buttons are in bold lettering, for example "Press the **UP/DOWN** buttons"
- References: References to chapters and parts of the device are in bold lettering, for example: "Refer to **2. Safety**", "press the **power switch (03)**"
- 0–255: Defines a range of values
- Notes: **Note:** (in bold lettering) is followed by useful information or tips

1.4. Symbols and Signal Words

Safety notes and warnings are indicated throughout the user manual by safety signs.

Always follow the instructions provided in this user manual.



DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.



Attention

Indicates important information for the correct operation and use of the product.



Important

Read and observe the instructions in this document.



Provides important information about the disposal of this product.

1.5. Symbols on the Information Label

This product is provided with an information label. The information label is located on the bottom plate of the device.

The information label contains the following symbols:



This device shall not be treated as household waste.

2. Safety

**Important**

Read and follow the instructions in this user manual before installing, operating or servicing this product.

The manufacturer will not accept liability for any resulting damages caused by the non-observance of this manual.

2.1. Warnings and Safety Instructions

**DANGER**

Danger for children

For adult use only. The device must be installed beyond the reach of children.

- Do not leave various parts of the packaging (plastic bags, polystyrene foam, nails, etc.) within children's reach. Packaging material is a potential source of danger for children.

**Attention**

Incorrect handling of the AC power adapter may result in hazardous situations.

This device is delivered with an AC power adapter. Incorrect handling of the AC power adapter may result in hazardous situations.

- Use only the AC power adapter delivered with the device.
- Do not wrap the power cable around the power adapter or any other object. This can damage the internal wires.
- Do not cover the power adapter with anything when it is plugged into the socket-outlet. This may cause overheating.
- Do not expose the power adapter to water or other liquids.

Do not use the power adapter:

- If it shows signs of overheating, for example the plastic is damaged
- If the AC input pins show signs of corrosion or overheating
- If the power cable is damaged or shows signs of material fatigue

**Attention**

Power supply

Before connecting the AC power adapter to the power supply, make sure that the current, voltage and frequency match the input voltage, current and frequency specified on the information label on the AC power adapter.



Attention **General safety**

- Do not shake the device. Avoid brute force when installing or operating the device.
- If the device is dropped or struck, disconnect the device from the electrical power supply immediately.
- If the device is exposed to extreme temperature variations (e.g. after transportation), do not switch it on immediately. Let the device reach room temperature before switching it on, otherwise it may be damaged by the formed condensation.
- If the device fails to work properly, discontinue the use immediately.



Attention **This device shall be used only for the purposes it is designed for.**

This device is designed to be used as a digital crossover. Any incorrect use may lead to hazardous situations and result in injuries and material damage.

This device does not contain user-serviceable parts. Unauthorized modifications to the device will render the warranty void. Such modifications may result in injuries and material damage.



Attention **Do not expose the device to conditions that exceed the rated IP class conditions.**

This device is IP20 rated. IP (Ingress Protection) 20 class provides protection against solid objects greater than 12 mm, such as fingers, and no protection against harmful ingress of water.

2.2. Requirements for the User

This product may be used by ordinary persons. Maintenance and installation may be carried by ordinary persons. Service shall be carried out only by instructed or skilled persons. Contact your Highlite International dealer for more information.

Instructed persons have been instructed and trained by a skilled person, or are supervised by a skilled person, for specific tasks and work activities associated with the service of this product, so that they can identify risks and take precautions to avoid them.

Skilled persons have training or experience, which enables them to recognize risks and to avoid hazards associated with the service of this product.

Ordinary persons are all persons other than instructed persons and skilled persons. Ordinary persons include not only users of the product but also any other persons that may have access to the device or who may be in the vicinity of the device.

3. Description of the Device

The DAP DCP-24 MKII is a 4-channel digital crossover. The device can be installed in a standard 19-inch rack. It is equipped with a 5-band equalizer, volume control, X-over, reverse, limiter and delay. The device is suitable for PA systems as well as line arrays, audio installations and sound distribution networks. You can connect the device to a PC or a Mac and use the DSPControl software (Windows/MacOS) to fine-tune your sound system.

3.1. Front View

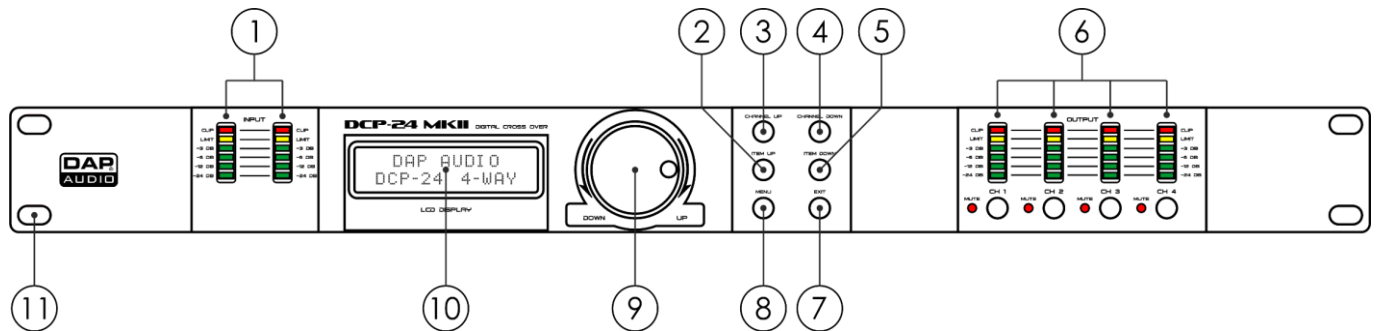


Fig. 02

- 01) Input LED indicator
- 02) Item up button
- 03) Channel up button
- 04) Channel down button
- 05) Item down button
- 06) Output LED indicators + mute buttons (CH 1-4)
- 07) Exit button
- 08) Menu button
- 09) Jog wheel
- 10) LCD display
- 11) 4 x mounting opening (for installation in a 19-inch rack)

3.2. Back View

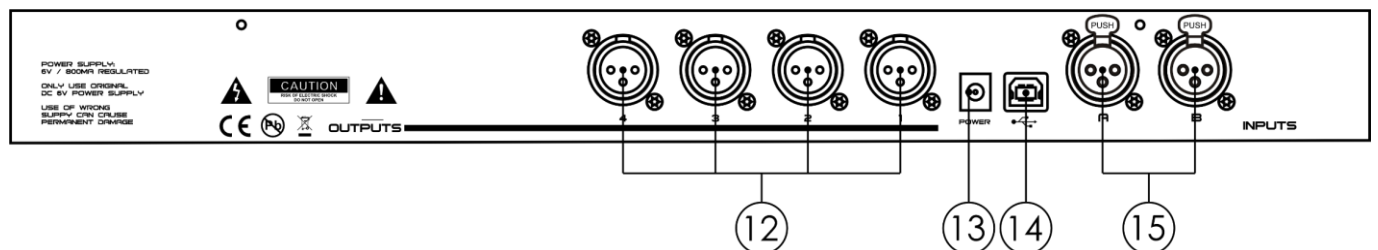


Fig. 03

- 12) 4 x 3-pin XLR balanced connector OUT (1-4)
- 13) DC power connector IN
- 14) USB-B connector
- 15) 2 x 3-pin XLR balanced connector IN (A-B)

3.3. Product Specifications

Model:	DCP-24 MKII Digital Cross Over
Electrical:	
Power supply:	220–240 V AC, 50 Hz
Output voltage:	6 V DC
SMPS:	Yes
Power consumption:	4 W
Power connector:	Low-voltage DC plug
Data connector:	USB-B connector
Outputs:	
Main outputs:	4 x 3-pin XLR balanced connector
Main output headroom:	9 dB
Main output maximum level:	0 dBu
Main output impedance:	100 Ω
Inputs:	
Mono inputs:	2 x 3-pin balanced connector
Mono input headroom:	22 dB
Mono input gain range:	12 dB
Mono balanced input max. level:	22 dBu
Mono input impedance:	10000 Ω
Audio Specifications:	
THD level:	< 0,01 %
Signal-to-noise ratio:	> 90 dB
Audio latency:	1,27 ms
DSP processor bitrate:	64 bit
Frequency response:	20–20000 Hz
Software Specifications:	
Supported operating systems:	Windows/MacOS
Sound editing:	
Equalizer range:	12 dB
Parametric input equalizer:	5 bands
Parametric output equalizer:	5 bands
Equalizer types (input):	Allpass/Bell/High Shelf/Low Shelf/Notch
Equalizer types (output):	High Shelf 6/High Shelf 12/Low Shelf 6/Low Shelf 12
Crossover filter types:	Bessel/Butterworth/Linkwitz Riley
Crossover slopes:	6/12/24/48 dB
Dynamics type:	Limiter
Phase reverse:	Yes
Limiter threshold:	From -20 to +20 dB
Limiter release time:	1–100 ms
Max. output delay:	8 ms
Internal storage:	
User presets capacity:	50
Physical:	
Dimensions:	483 x 155 x 44,5 mm (L x W x H), 19" x 1 U
Installation depth (excl. connectors):	155 mm
Weight:	1,9 kg

Control and programming:	
Control panel:	LCD display and jog wheel
Control mode:	Manual/PC or Mac software
Product properties:	
LED indicators:	Clip/Input level/Operation mode/Output level/Signal
Construction:	
Housing:	Metal
Color:	Black
IP rating:	IP20
Thermal:	
Minimum ambient temperature t_a :	0 °C
Maximum ambient temperature t_a :	40 °C

3.4. Dimensions

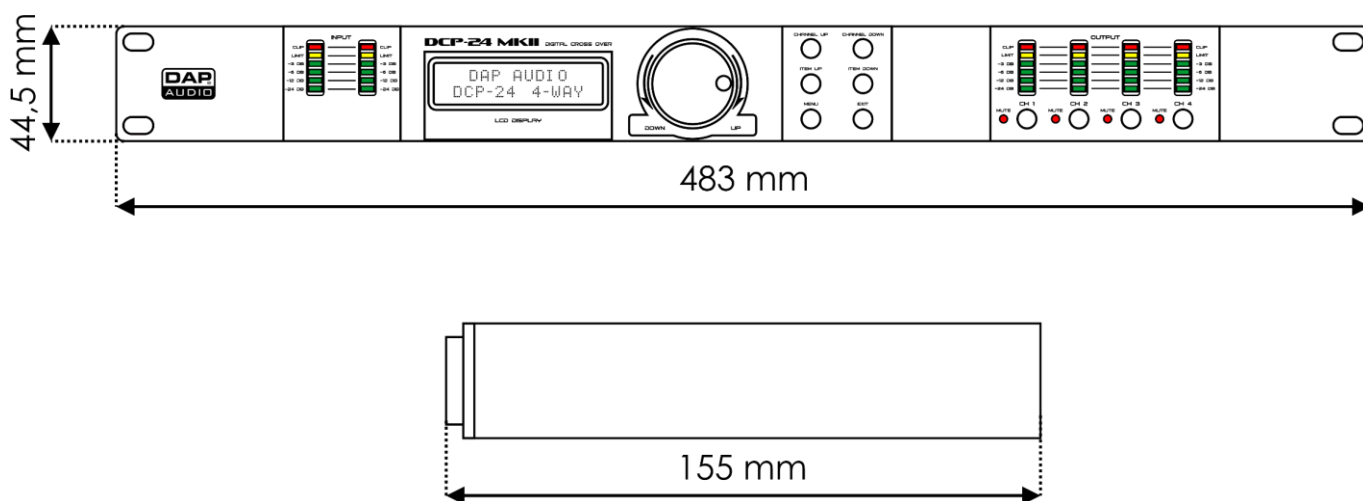


Fig. 04

4. Installation

4.1. Safety Instructions for Installation

**Attention**

Make sure there is enough space for ventilation around the device.

Do not install near equipment that produces heat, for example amplifiers.

4.2. Installation Site Requirements

- The device must be installed only indoors.
- The device can be placed on a flat surface or mounted in a standard 19-inch rack.
- The maximum ambient temperature $t_a = 40\text{ °C}$ must never be exceeded.
- The relative humidity must not exceed 50 % with an ambient temperature of 40 °C .

4.3. Rack Mounting

The device can be mounted in a standard 19-inch rack. The device requires 1 rack unit (U) of space, which is 44,5 mm high. Make sure that the rack is sufficiently secured to prevent it from becoming unstable or falling over.

To mount the device in a two-post rack, follow the steps below:

- 01) Insert 4 cage nuts in the openings on the rack posts where you want to mount the device.
- 02) Position the device in front of the rack posts so that the **4 x mounting openings (11)** on the flanges face the openings on the rack posts with cage nuts.
- 03) Using a screwdriver, mount the device to the rack posts with 4 screws.

5. Setup

5.1. Warnings and Precautions



Attention

Connect all data cables before supplying power.

Disconnect power supply before connecting or disconnecting data cables.

Connect the device to power supply only when the amplifiers are switched off, to avoid loud transients that could damage the connected speakers. See **5.2.3. Connecting to Power Supply** on page 14.

5.2. Connecting Devices

To connect and use the device, follow the steps below:

- 01) Install the DSPControl software. See **5.3. Software Installation** on pages 15–17.
- 02) Connect the device to a PC or a Mac, with the supplied USB cable, via the **USB-B connector (14)**.
- 03) Connect speakers:
 - To connect passive speakers, see **5.2.1. Setup with Passive Speakers** on page 13.
 - To connect active speakers, see **5.2.2. Setup with Active Speakers** on page 14.
- 04) Connect an audio mixer to the **2 x 3-pin XLR balanced connectors IN (15)**.
- 05) Switch on the audio mixer.
- 06) Switch on the device. See **5.2.3. Connecting to Power Supply** on page 14 for more information.
- 07) Switch on the amplifier (if applicable).
- 08) Switch on the speakers (if applicable).

Note:

After connecting all cables, perform a cabling test.



Attention

Incorrect cabling may damage the speakers.

When performing the test, activate the high-frequency outputs first. If the cabling is incorrect, high-frequency audio signals will be produced by the bass speakers that cannot get damaged this way.

If you activate the low-frequency outputs first, and the cabling is incorrect, low-frequency audio signals can seriously damage your high-frequency speakers.

To perform the test, follow the steps below:

- 01) Press all mute buttons under the **output LED indicators (06)**, to mute all outputs.
- 02) Activate the outputs.

5.2.1. Setup with Passive Speakers

To complete a setup with passive speakers, follow the steps below:

- 01) Connect the inputs of the 1st amplifier to the **3-pin XLR balanced connectors OUT 1 and 2 (12)**.
- 02) Connect the outputs of the 1st amplifier to the inputs of the 2 passive speakers.
- 03) Connect the inputs of the 2nd amplifier to the **3-pin XLR balanced connectors OUT 3 and 4 (12)**.
- 04) Connect the outputs of the 2nd amplifier to the inputs of the 2 passive subwoofers.

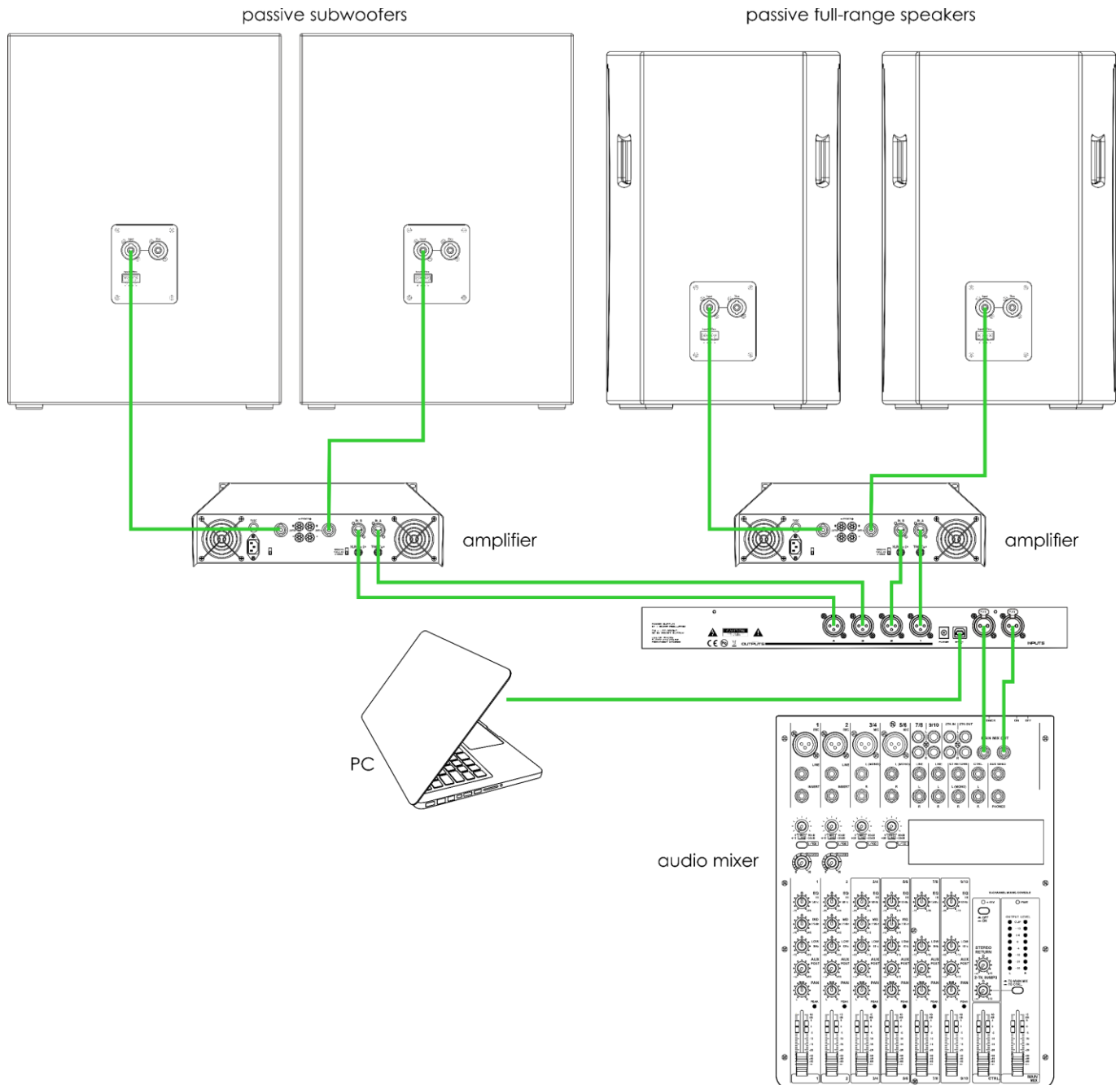


Fig. 05

5.2.2. Setup with Active Speakers

To complete a setup with active speakers, follow the steps below:

- 01) Connect the input of the 1st active speaker to the **3-pin XLR balanced connector OUT 1 (12)**.
- 02) Connect the input of the 2nd active speaker to the **3-pin XLR balanced connector OUT 2 (12)**.
- 03) Connect the input of the 1st active subwoofer to the **3-pin XLR balanced connector OUT 3 (12)**.
- 04) Connect the input of the 2nd active subwoofer to the **3-pin XLR balanced connector OUT 4 (12)**.

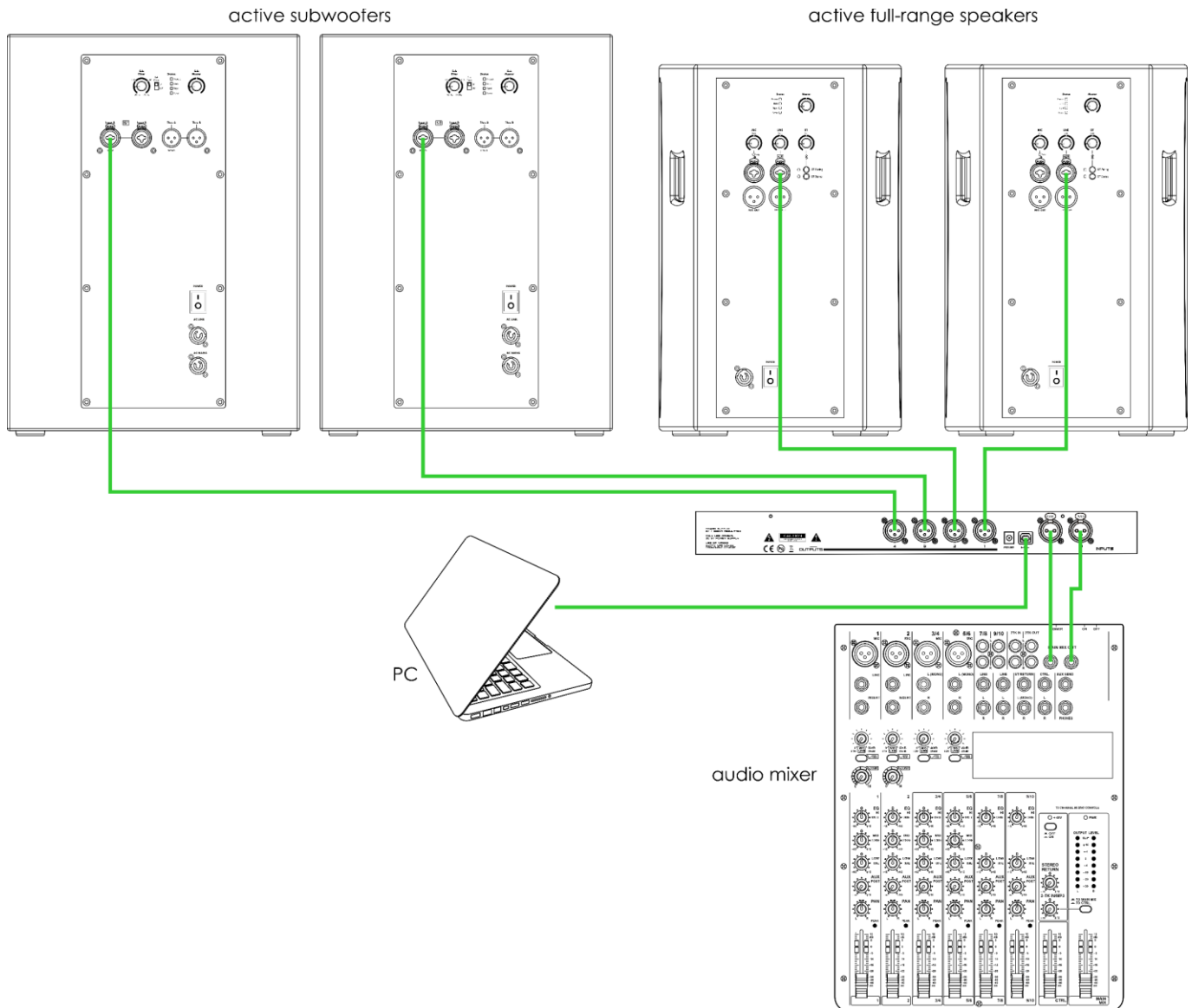


Fig. 06

5.2.3. Connecting to Power Supply



Attention

Incorrect handling of the AC power adapter may result in hazardous situations

This device is delivered with an AC power adapter. Incorrect handling of the AC power adapter may result in hazardous situations.

- Connect the device to the socket-outlet with the delivered AC power adapter. Use only the AC power adapter delivered with the device.
- Make sure that the socket-outlet is easily accessible.
- Disconnect the AC power adapter from the socket-outlet when the device is not in use.

5.3. Software Installation

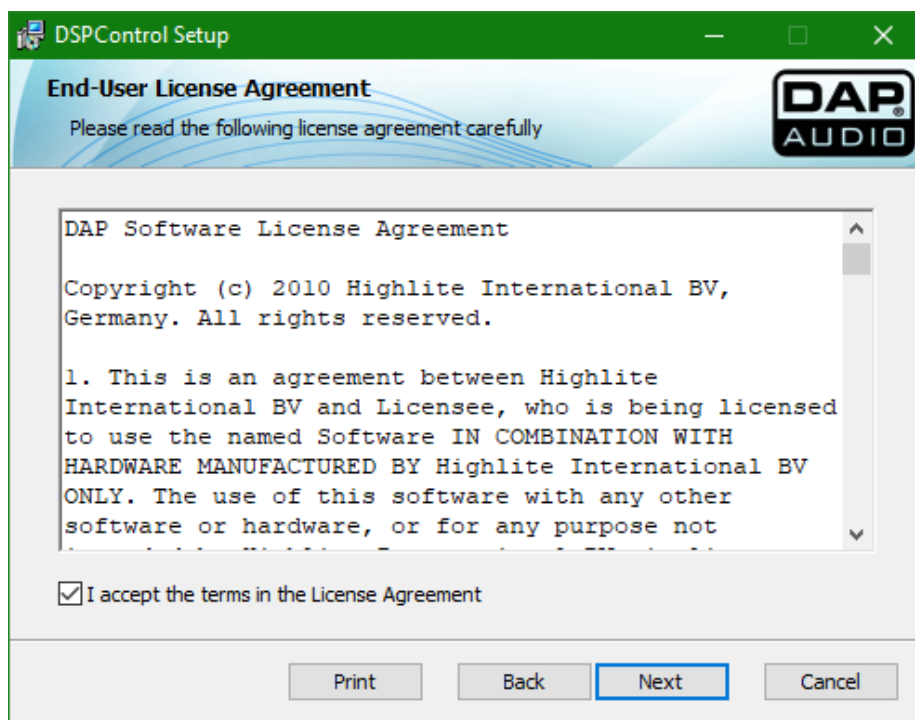
Download the DSPControl software. Check the product page on the website of Highlite International (www.highlite.com).

To install the DSPControl software on your PC or a Mac, follow the steps below:

01) Execute the downloaded setup file.

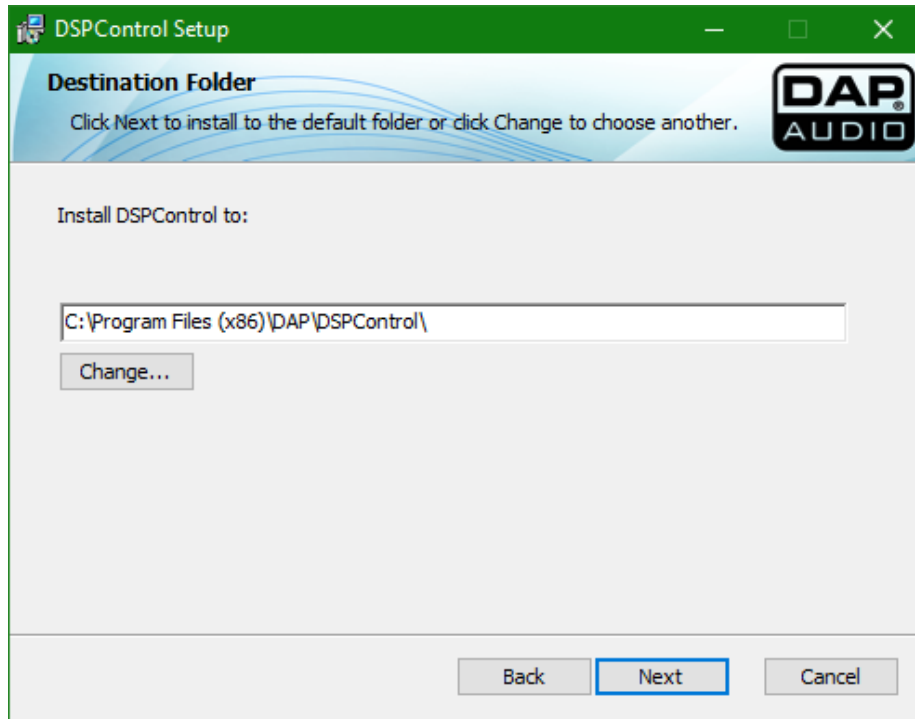


02) Click on NEXT.

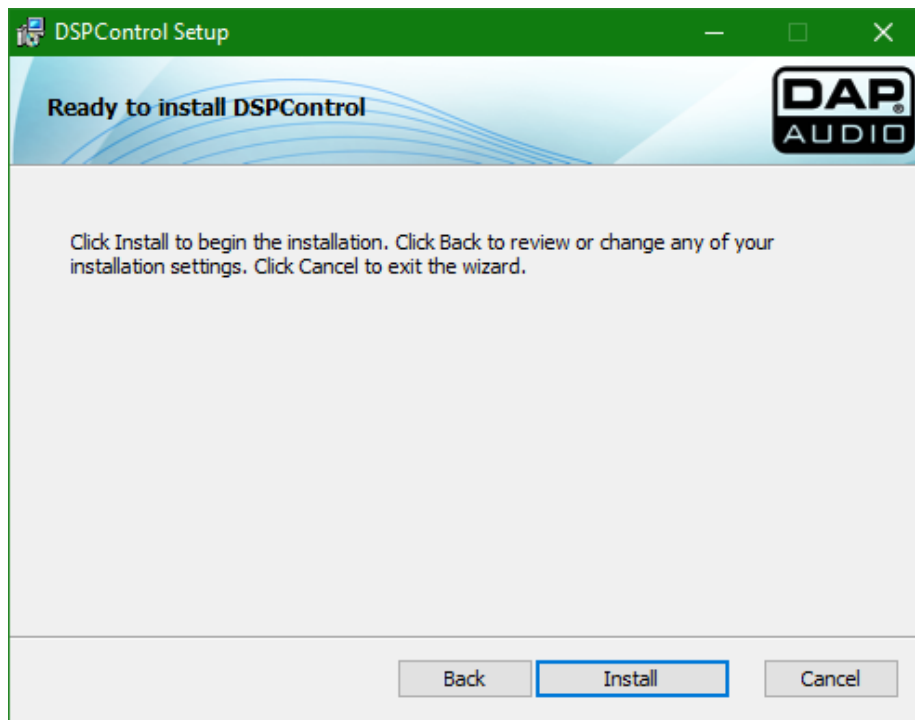


03) Accept the terms and click on NEXT.

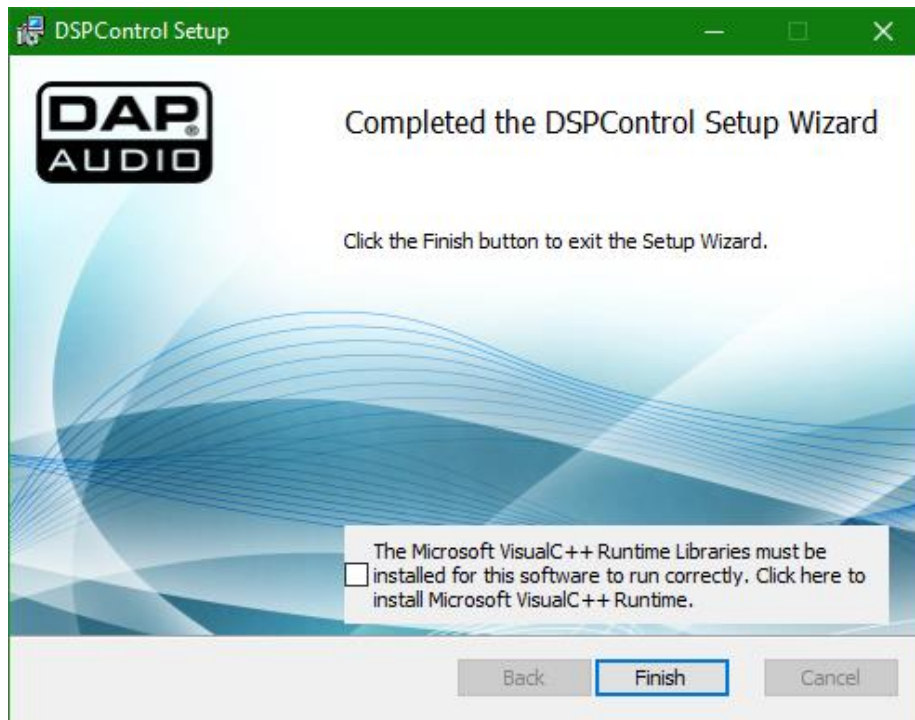
04) Select the installation path.



05) Click on NEXT.



- 06) Click on INSTALL to install the DSPControl on the PC or a Mac. When the software is installed, you will see the pop-up:



- 07) Click on FINISH to finish the installation.

Note:

It is recommended to install the Microsoft VisualC++Runtime Libraries, for the software stability.

6. Operation

6.1. Safety Instructions for Operation



Attention

This device must be used only for the purposes it is designed for.

This device is intended for use as a professional digital crossover. It is suitable only for indoor installation.

Any other use, not mentioned under intended use, is regarded as non-intended and incorrect use.

6.2. Main Menu Options

In the main menu you can perform the following actions:

- | | |
|--|--------------------------------|
| • adjust the routing settings | see 6.2.1. Routing |
| • load presets | see 6.2.2. Load |
| • save presets | see 6.2.3. Save |
| • lock/unlock the main menu | see 6.2.4. Access Level |
| • view serial number/firmware/hardware version | see 6.2.5. Version Info |

6.2.1. Routing

In this menu you can adjust the routing settings.

01) Press the **menu button (08)** until the display shows:

Routing:
Stereo 1-Way

02) Turn the **jog wheel (09)** to the left/right to select one of the 3 options:

- | | |
|----------------|--|
| • STEREO 1-WAY | (Channels: In AB, Out 12, Out 34) |
| • STEREO 2-WAY | (Channels: In AB, Out 12, Out 34) |
| • MONO 4-WAY | (Channels: In A, In B, Out 1, Out 2, Out 3, Out 4) |

6.2.2. Load

In this menu you can load the saved presets.

Note:

To be able to load presets, create at least 1 preset. See **6.2.3. Save** on page 19 for more information.

01) Press the **menu button (08)** until the display shows:

Load: **1**
My preset

02) Turn the **jog wheel (09)** to the left/right to select one of the 50 preset slots.

Notes:

When a preset slot is occupied, the display shows the name of the preset.

When a preset slot is free, the display reads "EMPTY".

03) Press the **jog wheel (09)** to confirm. The display shows:

Load Preset ?
NO/yes

04) Turn the **jog wheel (09)** to the left (to select NO, to cancel) or to the right (to select YES, to load the preset).

05) Press the **jog wheel (09)** to confirm. The display shows:

DAP DCP-24
1 My preset

The preset is loaded.

6.2.3. Save

In this menu you can save presets.

01) Press the **menu button (08)** until the display shows:

Save: 1
Empty

02) Turn the **jog wheel (09)** to the left/right to select one of the 50 preset slots.

Notes:

When a preset slot is occupied, the display shows the name of the preset.

When a preset slot is free, the display reads "EMPTY".

03) Press the **jog wheel (09)** to confirm. The display shows:

Set Presetname:

04) Turn the **jog wheel (09)** to the left/right to select characters. The available characters are uppercase and lowercase letters, digits, punctuation marks, and some symbols.

05) Press the **jog wheel (09)** to confirm.

06) Repeat steps 4–5 to create a name for the preset. A preset name can consist of a maximum of 16 characters.

Notes:

When creating preset names, you can:

- press the **jog wheel (09)** to move the cursor to the left.
- press the **item down button (05)** to move the cursor to the right.
- press the **exit button (07)** to remove the currently selected character.

07) Press the **menu button (08)** to confirm the preset name. The display shows:

Save Preset ?
NO/yes

08) Turn the **jog wheel (09)** to the left (to select NO, to cancel) or to the right (to select YES, to save the preset).

09) Press the **jog wheel (09)** to confirm. The display shows:



Preset Saved
My preset

The preset is saved.

6.2.4. Access Level

In this menu you can set a password and restrict access to the menu.

Press the **menu button (08)** until the display shows one of the 2 screens:



Access Level:
Unlocked

Unlocked



Access Level:
**** Locked ****

Locked

6.2.4.1. Locking the Menu

To lock the menu, follow the steps below:

01) Turn the **jog wheel (09)** to the right. The display shows:



Access Level:
**** Locked ****

02) Press the **jog wheel (09)** to confirm. The display shows:



Set Password
HIGHLIGHT

03) Turn the **jog wheel (09)** to the left/right to select characters. The available characters are uppercase and lowercase letters, digits, punctuation marks, and some symbols.

04) Press the **jog wheel (09)** to confirm.

05) Repeat steps 3–4 to change the password. The default password is: HIGHLIGHT.

Notes:

When changing the password, you can:

- press the **item down button (05)** to move the cursor to the left.
- press the **item up button (02)** to move the cursor to the right.
- press the **exit button (07)** to remove the currently inserted password.

06) Press the **menu button (08)** to finish. The display shows:



Confirm Password
HIGHLIGHT

07) Press the **menu button (08)** to confirm the password. The menu is locked.

6.2.4.2. Unlocking the Menu

To unlock the menu, follow the steps below:

01) Turn the **jog wheel (09)** to the left. The display shows:

Access Level:
Unlocked

02) Press the **jog wheel (09)** to confirm. The display shows:

Enter Password
HIGHLITE

03) Turn the **jog wheel (09)** to the left/right to select characters. The available characters are uppercase and lowercase letters, digits, punctuation marks, and some symbols.

04) Press the **jog wheel (09)** to confirm.

05) Repeat steps 3–4 to insert the password. The default password is: HIGHLITE.

Notes:

When changing the password, you can:

- press the **item down button (05)** to move the cursor to the left.
- press the **item up button (02)** to move the cursor to the right.
- press the **exit button (07)** to remove the currently inserted password.

06) Press the **menu button (08)** to confirm the password.

Notes:

- If the inserted password was correct, the main menu is unlocked.
- If the inserted password was incorrect, try again.

6.2.5. Version Info

In this menu you view the software/firmware/hardware version.

01) Press the **menu button (08)** until the display shows:

Version Info:
FW: 3.8.21.31656

02) Turn the **jog wheel (09)** to the left/right to select one of the 3 screens:

Version Info:
FW: 3.8.21.31656

Firmware version

Version Info:
HW: 2.2.2

Hardware version

Version Info:
SN: 0002244041

Serial number

6.3. Channel Setup

To adjust the settings of the input and output channels, follow the steps below:

01) Press the **exit button (07)** to quit the main menu. The display shows the start screen:

DAP DCP-24
1 My preset

02) Press the **channel up/down buttons (03/04)** to select the channel. The display shows:

In A Gain
12.00dB

Note:

Different routings have different sets of channels with different settings.

Routing	Channels	Gain	Low-pass filter	High-pass filter	PEQ 1-5	Compressor	Limiter	Link	Mixer	Delay	Phase
STEREO 1-WAY	In AB	x	x	x	x	x	x	x			
	Out 12	x	x	x	x	x	x	x		x	x
	Out 34	x	x	x	x	x	x	x		x	x
STEREO 2-WAY	In AB	x	x	x	x	x	x	x			
	Out 12	x	x	x	x	x	x	x		x	x
	Out 34	x	x	x	x	x	x	x		x	x
MONO 4-WAY	In A	x	x	x	x	x	x	x			
	In B	x	x	x	x	x	x	x			
	Out 1	x	x	x	x	x	x	x	x	x	x
	Out 2	x	x	x	x	x	x	x	x	x	x
	Out 3	x	x	x	x	x	x	x	x	x	x
	Out 4	x	x	x	x	x	x	x	x	x	x

03) Press the **item up/down buttons (02/05)** to select one of the following settings:

- GAIN see **6.3.1. Gain**
- LOWPASS see **6.3.2. Low-pass Filter**
- HIGHPASS see **6.3.3. High-pass Filter**
- PEQ 1-5 see **6.3.4. PEQ (Parametric Equalizer)**
- COMPR. see **6.3.5. Compressor**
- LIMITER see **6.3.6. Limiter**
- LINK see **6.3.7. Link**
- MIXER see **6.3.8. Mixer**
- DELAY see **6.3.9. Delay**
- PHASE see **6.3.10. Phase**

6.3.1. Gain

In this menu, you can set gain.

In A Gain
12.00dB

Turn the **jog wheel (09)** to the left/right to decrease/increase the value.

The adjustment range is from -47,75 dB to +12 dB and MUTE.

6.3.2. Low-pass Filter

In this menu you can set the low-pass filter.

In A LowPass
Freq: 50Hz

- 01) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is 50– 20000 Hz and OFF.
- 02) Press the **jog wheel (09)** to open the type settings. The display shows:

In A LowPass
Type: BUT 6dB

- 03) Turn the **jog wheel (09)** to the left/right to select the filter type (BUT - Butterworth, BES - Bessel or LR - Linkwitz Riley). Select one of the following 10 filters:
 - BUT 6 dB
 - BES 6 dB
 - BUT 12 dB
 - BES 12 dB
 - LR 12 dB
 - BUT 18 dB
 - BES 18 dB
 - BUT 24 dB
 - BES 24 dB
 - LR 24 dB
- 04) Press the **jog wheel (09)** to activate/deactivate the filter. The display shows:

In A LowPass
Enabled: On

- 05) Turn the **jog wheel (09)** to the left/right to select OFF/ON.

6.3.3. High-pass Filter

In this menu you can set the high-pass filter.

In A HighPass
Freq: 20000Hz

- 01) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is 20– 20000 Hz and OFF.
- 02) Press the **jog wheel (09)** to open the type settings. The display shows:

In A HighPass
Type: BUT 6dB

- 03) Turn the **jog wheel (09)** to the left/right to select the filter type (BUT - Butterworth, BES - Bessel or LR - Linkwitz Riley). Select one of the following 10 filters:
 - BUT 6 dB
 - BES 6 dB
 - BUT 12 dB
 - BES 12 dB
 - LR 12 dB
 - BUT 18 dB
 - BES 18 dB

- BUT 24 dB
- BES 24 dB
- LR 24 dB

04) Press the **jog wheel (09)** to activate/deactivate the filter. The display shows:

In A HighPass
Enabled: On

05) Turn the **jog wheel (09)** to the left/right to select OFF/ON.

6.3.4. PEQ (Parametric Equalizer)

In this menu you can set the parametric equalizer. Each channel has 5 parametric equalizers (PEQ 1–5).

In A PEQ 1
Freq: 20000Hz

01) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is 20– 20000 Hz.

02) Press the **jog wheel (09)** to open the gain settings. The display shows:

In A PEQ 1
Gain: 12.00dB

03) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is from -12 dB to +12 dB.

04) Press the **jog wheel (09)** to open the quality factor settings. The display shows:

In A PEQ 1
Q: 25.00

05) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is 0,10– 25.

06) Press the **jog wheel (09)** to open the type settings. The display shows:

In A PEQ 1
Type: Bell

07) Turn the **jog wheel (09)** to the left/right to select the filter type. Select one of the following 8 filters:

- BELL
- NOTCH
- HIGH SHELF
- LOW SHELF
- ALLPASS
- BAND PASS
- HIGH PASS
- LOW PASS

08) Press the **jog wheel (09)** to activate/deactivate the filter. The display shows:

In A PEQ 1
Enabled: On

09) Turn the **jog wheel (09)** to the left/right to select OFF/ON.

6.3.5. Compressor

In this menu you can set the compressor.

In A Compr.:
Thr.: 24.00dBu

- 01) Turn the **jog wheel (09)** to the left/right to decrease/increase the threshold value. The adjustment range is from -48 dBu to +24 dBu.
02) Press the **jog wheel (09)** to open the attack settings. The display shows:

In A Compr.:
Att.: 10000ms

- 03) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is 1– 10000 ms.
04) Press the **jog wheel (09)** to open the hold settings. The display shows:

In A Compr.:
Hold: 10000ms

- 05) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is 0– 10000 ms.
06) Press the **jog wheel (09)** to open the release settings. The display shows:

In A Compr.:
Rel.: 10000ms

- 07) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is 1– 10000 ms.
08) Press the **jog wheel (09)** to open the ratio settings. The display shows:

In A Compr.:
Ratio: Infinite

- 09) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is 1,20:1–25,00:1 and INFINITE.
10) Press the **jog wheel (09)** to open the gain settings. The display shows:

In A Compr.:
Gain: 12.00dB

- 11) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is from -12 dB to +12 dB.

6.3.6. Limiter

In this menu you can set the limiter.

In A Limiter
Thr.: 24.00dBu

- 01) Turn the **jog wheel (09)** to the left/right to decrease/increase the threshold value. The adjustment range is from -48 dBu to 24 dBu.
- 02) Press the **jog wheel (09)** to open the release settings. The display shows:

In A Limiter
Rel.: 100

- 03) Turn the **jog wheel (09)** to the left/right to decrease/increase the value. The adjustment range is 10– 100.

Note:

Enabling the limiter on a channel changes the way in which the level is displayed on the corresponding **output LED indicator (06)**. The displayed level is no longer the "absolute" value, but the level of the signal at -24 dB, -12 dB, -6 dB or -3dB (compared to the threshold of the limiter), regardless of the threshold value.

6.3.7. Link

In this menu you can link/unlink channels.

In A Link:
Off

Turn the **jog wheel (09)** to the left/right to select OFF/ON. The display shows:

In AB Link:
On

Note:

This option is fully functional only when STEREO 1-WAY or STEREO 2-WAY routing is selected. See **6.2.1. Routing** on page 18, for more information.

6.3.8. Mixer

In this menu you can set the mixer. This menu is available only when an output channel is selected.

Out 1 Mixer:
Input A 0dB

- 01) Turn the **jog wheel (09)** to the left/right to decrease/increase the mix volume of the input A. The adjustment range is OFF, from -47,75 dB to 0 dB.
- 02) Press the **jog wheel (09)** to open the mix volume settings of the input B.
- 03) Repeat step 1 to set the mix volume of the input B.

6.3.9. Delay

In this menu you can set the delay. This menu is available only when an output channel is selected.

Out 1 Delay
9.00Feet

- Turn the **jog wheel (09)** to the left/right to decrease/increase the delay. The adjustment range is 0– 9 feet, 0 mm – 2,74 m and 0–8000 ms.
- Press the **jog wheel (09)** to toggle the delay measurement unit (feet, meters, milliseconds).

6.3.10. Phase

In this menu you can set the signal phase mode. This menu is available only when an output channel is selected.

Out 1 Phase:
Normal

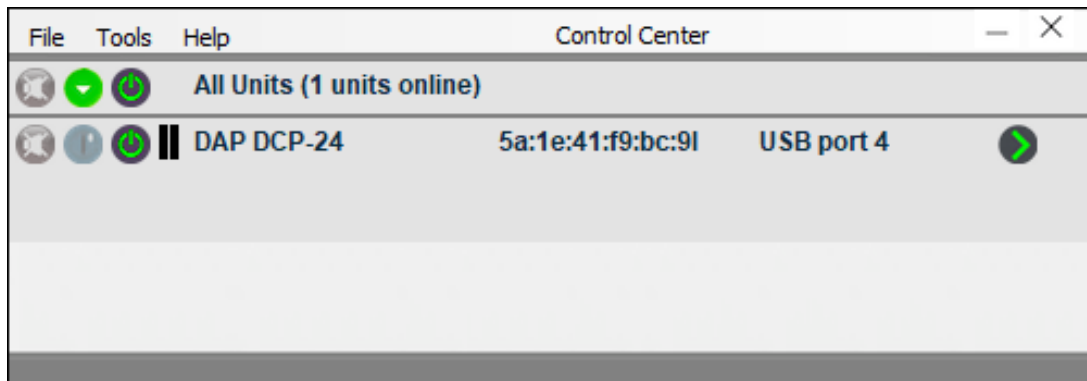
Turn the **jog wheel (09)** to the left/right to select NORMAL/INVERTED.

7. Software Operation

You can adjust the settings of the device with the DSPControl software. The instructions below pertain to the firmware version 3.9.0.

Make sure that the device is connected to the PC or Mac with the installed DSPControl software.

To start the software, double click on the DSPControl.exe file. The main window appears:



The main window shows all active devices, their MAC addresses and how they are connected to the PC or Mac.

The main window has the following clickable icons:

Function	Icon	Description
Mute		Device is not muted. Click to mute the device.
		Device is muted. Click to deactivate mute.
Fold/Unfold		Click to unfold the list of devices.
		Click to fold the list of devices.
Device Indicator		Click to activate the device.
		Device is active.
Status		Device is off. Click to switch the device on.
		Device is on. Click to switch the device off.
VU		VU meter displays the current signal level.
Arrow		Click to open the control panel of the selected device. See 7.2. Channel Control Panel on page 33.

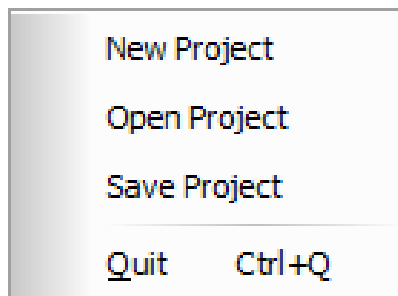
7.1. Menu Bar

The menu bar has 3 menu tabs:

- FILE see **7.1.1. File Tab**
- TOOLS see **7.1.2. Tools Tab**
- HELP see **7.1.3. Help Tab**

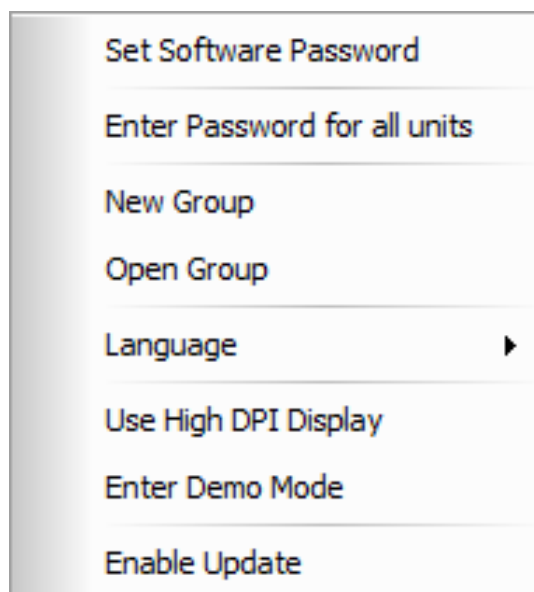
7.1.1. File Tab

In the FILE tab you can create, open and save projects. You can also quit the software.



7.1.2. Tools Tab

In the TOOLS tab you can set password(s) for the device(s), create/open groups, select the interface language, set the DPI of the display, enter the demo mode and update the software.



7.1.2.1. Set Software Password

In this menu you can set the software protection password.

If you set this password, you will need to insert it on each start-up of the software. Leave the password blank to disable the password.

7.1.2.2. Enter Password for all Units

In this menu you can set a password for all devices.

If you save and restore presets, their parameters may be limited by the access level imposed by the password.

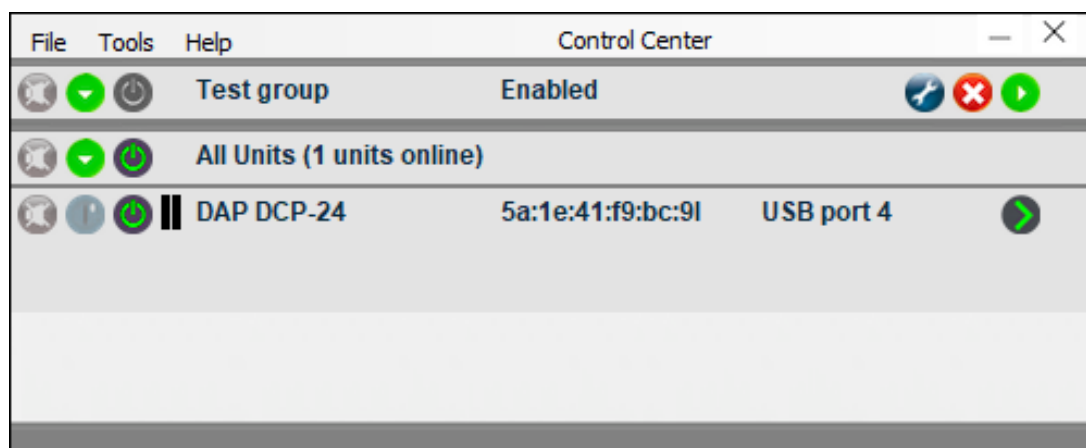
7.1.2.3. New Group

In this menu you can create groups.




The network-compatible speakers can be combined into groups.

To create a new group, name the new group and click on OK.

The new groups are displayed in the main window, above the connected individual speakers:



The group section has the following clickable icons:

Function	Icon	Description
Configure		Click to configure a group. See page 31 for more information.
Delete		Click to delete a group.
Activate		Click to activate a group.



The 'Configure Group' dialog box contains the following fields and buttons:

- Status:** A dropdown menu set to 'Enabled' with a 'Disable' button next to it.
- Name (max 20 characters):** A text input field containing 'Test group'.
- Type:** A dropdown menu set to 'Carbon Copy' with a 'Save Group' button next to it.
- Description:** A large text area for entering a description.
- Members:** A section with 'Select...' and 'Allocate...' buttons.
- Links:** A section with a '-> Exceptions' button.
- Bottom Buttons:** 'Delete Group', 'Ok', and 'Cancel' buttons.

You can configure the following settings:

- **STATUS:** See if the group is disabled/enabled
- **NAME:** Name the group
- **TYPE:** Select a group function (Mute, Carbon Copy, EQ Panel, Relative, Group EQ, Advanced)
- **DESCRIPTION:** Describe the group
- **SELECT:** Add virtual units that will be replaced by physical speakers.
 - 01) Click on ADD VIRTUAL UNIT to create a place for a speaker in the network (virtual unit).
 - 02) Select a virtual unit you want to add/remove.
 - 03) Click on >> (add all), > (add selected item), < (remove selected item) or << (remove all) to move virtual units to/from the group.
- **ALLOCATE:** Replace virtual units with physical speakers in the network.
 - 01) Select a virtual unit you want to link/unlink.
 - 02) Click on LINK or UNLINK.

Select a speaker and click on UNLINK to remove the speaker from the group and replace it with a virtual unit.
- **EXCEPTIONS:** Add exceptions
- **SAVE GROUP:** Save a group
- **DELETE GROUP:** Delete a group

7.1.2.4. Open Group

You can open the created groups.

7.1.2.5. Language

You can select the menu language.

There are 4 languages available:

- Chinese
- Deutsch (German)
- English
- Nederlands (Dutch)

7.1.2.6. Use High DPI Display

You can select the scaled DPI display or the high DPI display.

7.1.2.7. Enter Demo Mode

In this mode you can test the software and create presets without connected speakers.

7.1.2.8. Enable Update

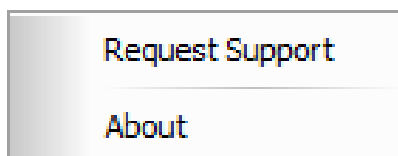
Enter the password.

Note:

If you back up your presets and restore them, their parameters may be limited by the access level assigned to the currently inserted password.

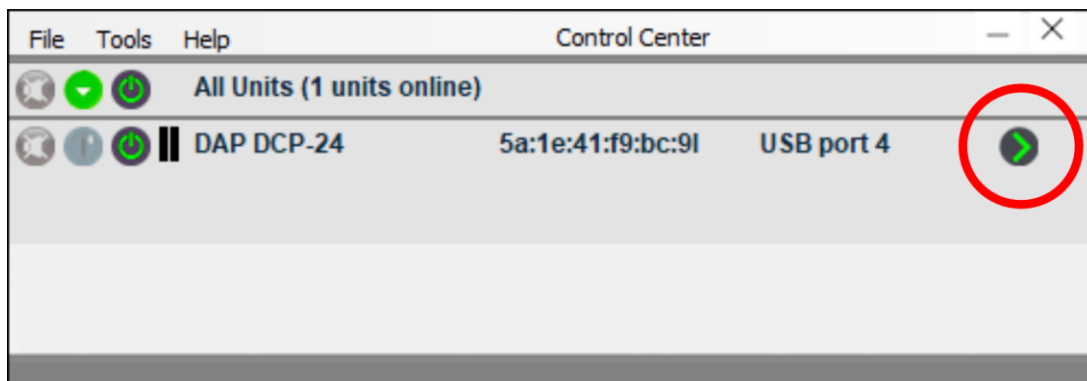
7.1.3. Help Tab

In the HELP tab you can ask for support and view the firmware version.

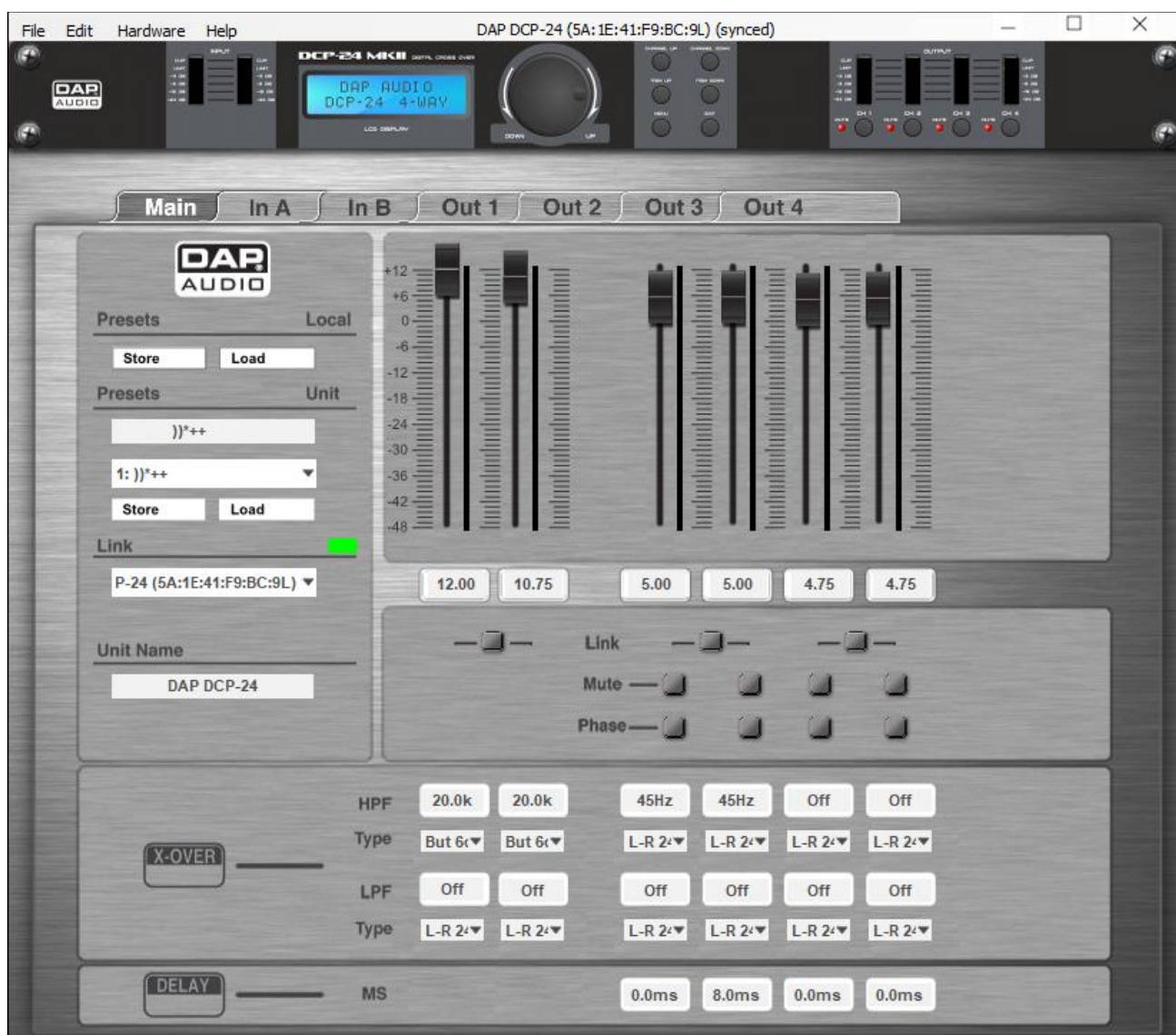


7.2. Channel Control Panel

Click on the green arrow icon to open the channel control panel.



The channel control panel opens:



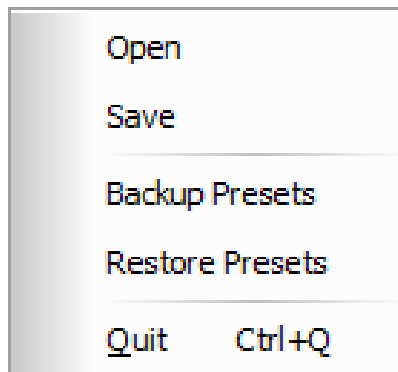
7.2.1. Channel Control Panel Menu Bar

Channel Control Panel Menu Bar has 4 menu tabs:

- FILE see 7.2.1.1. File Tab
- EDIT see 7.2.1.2. Edit Tab
- HARDWARE see 7.2.1.3. Hardware Tab
- HELP see 7.2.1.4. Help Tab

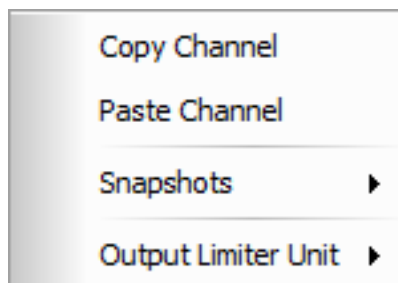
7.2.1.1. File Tab

In the FILE tab you can open, save, backup and restore presets. You can also quit the software.



7.2.1.2. Edit Tab

In the EDIT tab you can copy/paste channel settings, create/restore snapshots and set the output limiter unit.



To copy the settings from one channel to multiple channels, follow the steps below:

- 01) Open a channel.
- 02) Adjust the settings of the channel.
- 03) Go to the EDIT tab and click on COPY CHANNEL.
- 04) Open the target channel.
- 05) Go to the EDIT tab and click on PASTE CHANNEL.

To save and use snapshots, follow the steps below:

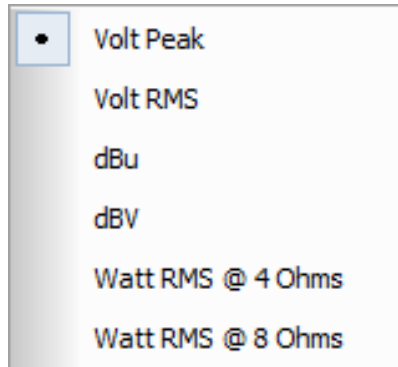
- 01) Open and adjust the settings of multiple channels.
- 02) Go to the EDIT tab, click on SNAPSHOTS and on MAKE A SNAPSHOT.
- 03) Name the snapshot.
- 04) Adjust the settings of the channels.

Note:

If you want to return to the original template, go to the EDIT tab, click on SNAPSHOTS and select the previously saved snapshot. The original template is restored.

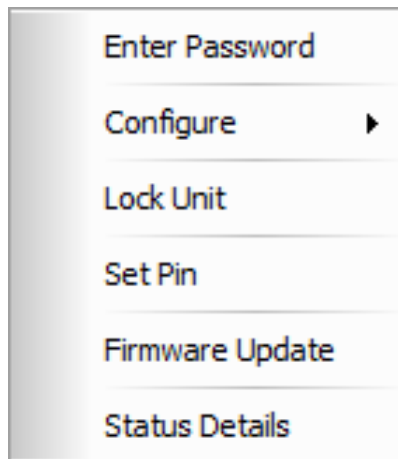
To select the output limiter unit, follow the steps below:

- 01) Go to the EDIT tab and click on OUTPUT LIMITER UNIT.
- 02) Select one of the following options:



7.2.1.3. Hardware Tab

In the HARDWARE tab you can adjust the access settings. You can lock speakers, set the PIN code and adjust access levels.



The available options are:

- ENTER PASSWORD: Insert the password
- CONFIGURE: In this submenu you can select:
 - CHANGE PASSWORD: You can change the password
 - POWER ON PRESET: You can select a preset that will be loaded on start-up
 - GLOBAL ACCESS RIGHTS: You can decide which parts of the software should remain accessible when a speaker is locked
- LOCK UNIT: Lock the speaker. You can unlock it only with a correct password.
- SET PIN: Select a new PIN code
- FIRMWARE UPDATE: No function
- STATUS DETAILS: You can see whether there are any errors in the network.

7.2.1.4. Help Tab

In the HELP tab you can view the information about the DCP-24MKII and about the DSPControl software.

7.2.2. Channel Control Panel

The channel control panel consists of the:

- main panel See **7.2.2.1. Main Panel**
- input panels See **7.2.2.2. In A/In B Panels**
- output panels See **7.2.2.3. Out 1-4/1-6 Panels**

7.2.2.1. Main Panel

The main panel gives you a quick overview of the settings of all available input and output channels. You can view and adjust the basic settings of all available input and output channels.



LOCAL

In this section you can save and load software settings.

- Click on the STORE button to save software settings on your PC or Mac.
- Click on the LOAD button to load software settings from your PC or Mac.

UNIT

In this section you can save and load software settings in the memory of the speaker.

To save a software settings preset:

- 01) Name the preset.
- 02) Select an empty preset slot (1-50).
- 03) Click on the STORE button to save the current software settings on the speaker.

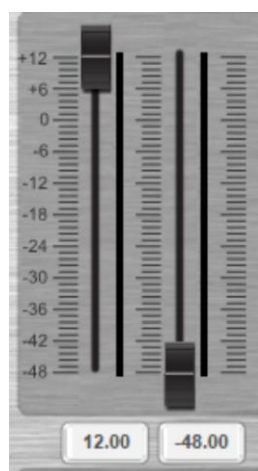
To load a software settings preset from the speaker, click on the LOAD button.

LINK

If more than one device is connected, click on the green box and select a device for editing.

UNIT NAME

In this section you can view the name of the device that you are editing.



There are 2 sliders for adjustment of gain of the input channels (A-B). There are 4 sliders (DCP-24 MKII) or 6 sliders (DCP-26 MKII) for adjustment of gain of the output channels.

To decrease/increase gain, perform one of the 2 actions:

- Move the slider up/down.
- Type a value manually in the field below a slider.

The adjustment range is from -48 dB to +12 dB.

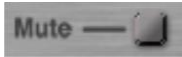
Each channel has its own VU meter, displaying the current signal level.



You can link/unlink the input channels (A-B). You can also link/unlink the output channels 1-2, 3-4 (and 5-6 when using DCP-26 MKII).

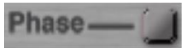
Click on the button to link channels. The button lights up blue.

When channels are linked, any adjustment of one channel has effect also on the other channel.



You can mute all output channels 1-4 (or 1-6 when using DCP-26 MKII).

Click on the button to mute a channel. The button lights up red.



You can reverse the signal phase of all output channels 1-4 (or 1-6 when using DCP-26 MKII).

Click on the button to reverse the signal phase. The button lights up red.



You can set the high-pass filter (HPF) and the low-pass filter (LPF) of the input channels (A-B) and the output channels 1-4 (or 1-6 when using DCP-26 MKII).

Type the value manually in the field. The adjustment range is 0-20000 Hz.

Select the filter type (BUT - Butterworth, BES - Bessel or LR - Linkwitz Riley):

- BUT 6 dB
- BES 6 dB
- BUT 12 dB
- BES 12 dB
- LR 12 dB
- BUT 18 dB
- BES 18 dB
- BUT 24 dB
- BES 24 dB
- LR 24 dB

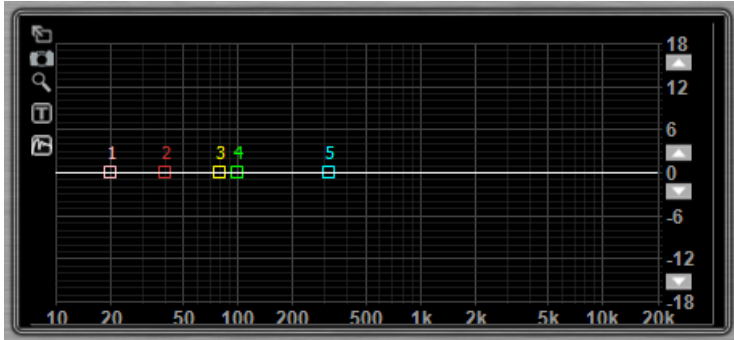


You can set the delay of the output channels 1-4 (or 1-6 when using DCP-26 MKII).

Type the value manually in the field. The adjustment range is 0-8 ms.

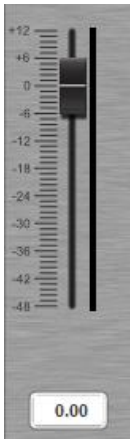
7.2.2.2. In A/In B Panels

This panel gives you a detailed overview of the settings of the input channel A or B. You can view and adjust all the settings.



The display shows the frequency curve of the corresponding channel.

Click-and-drag the EQ points (1–5) to edit the frequency and gain.



To decrease/increase gain, perform one of the 2 actions:

- Move the slider up/down.
- Type a value manually in the field below a slider.

The adjustment range is from -48 dB to +12 dB.

The channel has its own VU meter, displaying the current signal level.



Click on the button to mute the channel. The button lights up red.



You can set the limiter.

To set the threshold (THR) and release (REL) values, perform one of the 2 actions:

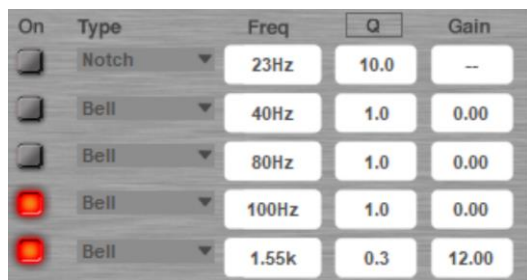
- Click-and-drag the controls.
- Type a value manually in the field below the corresponding control.

The adjustment range of the threshold is from -48 dB to +12 dB.

The adjustment range of the release is 1–100 ms.

Note:

Enabling the limiter on a channel changes the way in which the level is displayed on the corresponding output LED indicator (06). The displayed level is no longer the "absolute" value, but the level of the signal at -24 dB, -12 dB, -6 dB or -3dB (compared to the threshold of the limiter), regardless of the threshold value.



You can set the parametric equalizers.

To set the parametric equalizers:

Type values manually in the frequency (FREQ), the quality factor (Q) and GAIN fields.

- The adjustment range of the frequency is 20–20000 Hz.
- The adjustment range of the quality factor is 0,1–25.
- The adjustment range of gain is from -12 dB to +12 dB.

Select one of the 8 filter types:

- BELL
- NOTCH
- HIGH SHELF
- LOW SHELF
- ALLPASS
- BAND PASS
- HIGH PASS
- LOW PASS

Click on the ON button to activate the filter. When active, the button lights up red.



You can set the high-pass filter (HPF) and the low-pass filter (LPF).

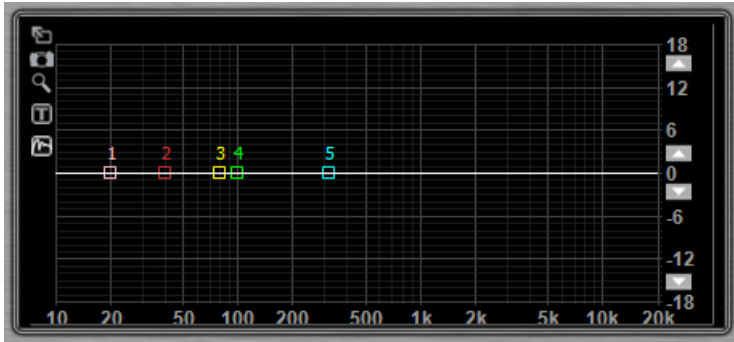
Type the value manually in the field. The adjustment range is 0–20000 Hz.

Select the filter type (BUT - Butterworth, BES - Bessel or LR - Linkwitz Riley):

- BUT 6 dB
- BES 6 dB
- BUT 12 dB
- BES 12 dB
- LR 12 dB
- BUT 18 dB
- BES 18 dB
- BUT 24 dB
- BES 24 dB
- LR 24 dB

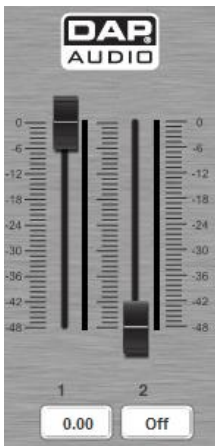
7.2.2.3. Out 1–4/1–6 Panels

This panel gives you a detailed overview of the settings of the output channels 1–4 (or 1–6 when using DCP-26 MKII). You can view and adjust all the settings.



The display shows the frequency curve of the corresponding channel.

Click-and-drag the EQ points (1–5) to edit the frequency and gain.



You can mix both input channels (A–B).

To decrease/increase gain, perform one of the 2 actions:

- Move the slider up/down.
- Type a value manually in the field below a slider.

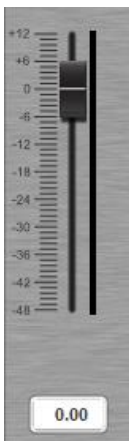
The adjustment range is from -48 dB to 0 dB.

To mute an input channel, type “off” in the field below a slider.

The VU meters next to the faders show the input levels for each input.

Note:

The mixer does not function if the input channels are linked.

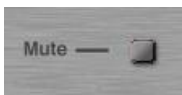


To decrease/increase gain, perform one of the 2 actions:

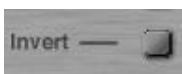
- Move the slider up/down.
- Type a value manually in the field below a slider.

The adjustment range is from -48 dB to +12 dB.

The channel has its own VU meter, displaying the current signal level.



Click on the button to mute the channel. The button lights up red.



You can reverse the signal phase of all output channels 1–4 (or 1–6 when using DCP-26 MKII).

Click on the button to reverse the signal phase. The button lights up red.

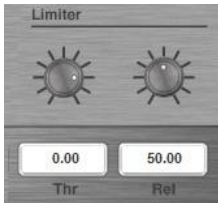


You can set the delay of the output channels 1–4 (or 1–6 when using DCP-26 MKII).

To decrease/increase gain, perform one of the 2 actions:

- Click-and-drag the control.
- Type a value manually in the field below the control.

The adjustment range is 0–8 ms.



You can set the limiter.

To set the threshold (THR) and release (REL) values, perform one of the 2 actions:

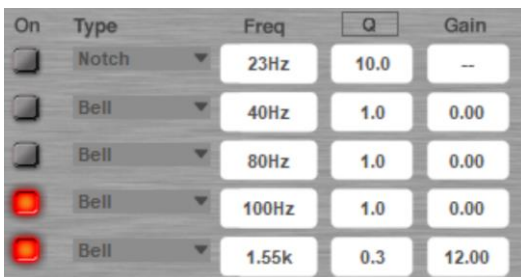
- Click-and-drag the controls.
- Type a value manually in the field below the corresponding control.

The adjustment range of the threshold is from -48 dB to +12 dB.

The adjustment range of the release is 1–100 ms.

Note:

Enabling the limiter on a channel changes the way in which the level is displayed on the corresponding **output LED indicator (06)**. The displayed level is no longer the "absolute" value, but the level of the signal at -24 dB, -12 dB, -6 dB or -3dB (compared to the threshold of the limiter), regardless of the threshold value.



You can set the parametric equalizers.

Type values manually in the frequency (FREQ), the quality factor (Q) and GAIN fields.

- The adjustment range of the frequency is 20–20000 Hz.
- The adjustment range of the quality factor is 0,2–25.
- The adjustment range of gain is from -12 dB to +12 dB.

Select one of the 8 filter types:

- BELL
- NOTCH
- HIGH SHELF
- LOW SHELF
- ALLPASS
- BAND PASS
- HIGH PASS
- LOW PASS

Click on the ON button to activate the filter. The button lights up red.



You can set the high-pass filter (HPF) and the low-pass filter (LPF).

Type the value manually in the field. The adjustment range is 0–20000 Hz.

Select the filter type (BUT - Butterworth, BES - Bessel or LR - Linkwitz Riley):

- BUT 6 dB
- BES 6 dB
- BUT 12 dB
- BES 12 dB
- LR 12 dB
- BUT 18 dB
- BES 18 dB
- BUT 24 dB
- BES 24 dB
- LR 24 dB

8. Troubleshooting

This troubleshooting guide contains solutions to problems which can be carried out by an ordinary person. The device does not contain user-serviceable parts. Unauthorized modifications to the device will render the warranty void. Such modifications may result in injuries and material damage. Refer servicing to instructed or skilled persons. Contact your Highlite International dealer in case the solution is not described in the table.

Problem	Probable cause(s)	Solution
The device does not function at all	No power to the device	<ul style="list-style-type: none"> • Check if power is switched on and cables are plugged in
	Internal fuse is blown	<ul style="list-style-type: none"> • Return the device to your DAP dealer
	The volume is set to minimum	<ul style="list-style-type: none"> • Increase the volume
No sound	Incorrect settings	<ul style="list-style-type: none"> • Correct the settings of the device • Correct the settings of the DSPControl software
	Incompatible devices	<ul style="list-style-type: none"> • Make sure that the connected devices are compatible
	Incorrect polarity of the connections	<ul style="list-style-type: none"> • Examine if the polarity of the connections between the devices is correct

9. Maintenance

9.1. Safety Instructions for Maintenance



DANGER
Electric shock caused by dangerous voltage inside

Disconnect power supply before servicing or cleaning.

9.2. Preventive Maintenance



Attention
Before use, examine the device visually for any defects.

Make sure that:

- All screws used for installing the device or parts of the device are tightly fastened and are not corroded.
- There are no deformations on housings, fixations and installation points.
- The power cables are not damaged and do not show any material fatigue.

9.2.1. Basic Cleaning Instructions

To clean the device, follow the steps below:

- 01) Disconnect the device from the electrical power supply.
- 02) Allow the device to cool down for 5 minutes.
- 03) Clean the device with a soft, lint-free cloth.



Attention

- Do not immerse the device in liquid.
- Do not use alcohol or solvents.

9.3. Corrective Maintenance

The device does not contain user-serviceable parts. Do not open the device and do not modify the device.

Refer repairs and servicing to instructed or skilled persons. Contact your Highlite International dealer for more information.

10. Deinstallation, Transportation and Storage

- Disconnect power supply before deinstallation.
- Use the original packaging to transport the device, if possible.
- Clean the device before storing. Follow the cleaning instructions in chapter **9.2.1. Basic Cleaning Instructions** on page 43.
- Store the device in the original packaging, if possible.

11. Disposal

Correct disposal of this product



Waste Electrical and Electronic Equipment

This symbol on the product, its packaging or documents indicates that the product shall not be treated as household waste. Dispose of this product by handing it to the respective collection point for recycling of electrical and electronic equipment. This is to avoid environmental damage or personal injury due to uncontrolled waste disposal. For more detailed information about recycling of this product contact the local authorities or the authorized dealer.

12. Approval



Check the respective product page on the website of Highlite International (www.highlite.com) for an available declaration of conformity.

DAP

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