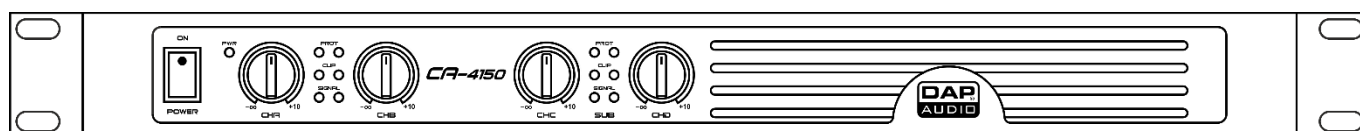


DAP

USER MANUAL



ENGLISH

CA-4150

V2

Product code: D4512

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 CA-4150
- Schuko to IEC power cable (1,5 m)
- User manual

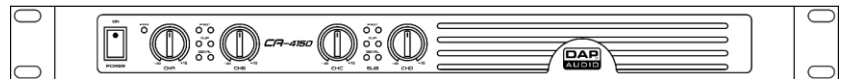
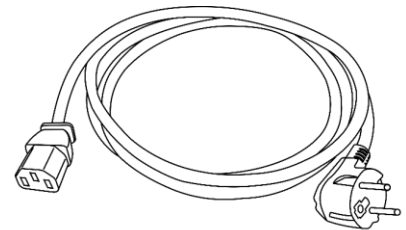


Fig. 01

1.2. Intended Use

This device is intended for professional use as an amplifier. It is suitable only for indoor installation.

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.



Electrical hazard



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 is designed for indoor use.



This device falls under IEC protection class I.



This device shall not be treated as household waste.



Caution: Risk of electric shock. Disconnect input power before opening.
Warning: This appliance must be earthed.

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.



DANGER
Electric shock caused by short-circuit

This device falls under IEC protection class I.

- Make sure that the device is electrically connected to ground (earth). Connect the device only to a socket-outlet with ground (earth) connection.
- Do not cover the ground (earth) connection.
- Do not bypass the thermostatic switch or fuses.
- For replacement use fuses of the same type and rating only.
- Do not let the power cable come into contact with other cables. Handle the power cable and all connections with the mains with caution.
- Do not modify, bend, mechanically strain, put pressure on, pull or heat up the power cable.
- Make sure that the power cable is not crimped or damaged. Examine the power cable periodically for any defects.
- Do not immerse the device in water or other liquids. Do not install the device in a location where flooding may occur.
- Do not use the device during thunderstorms. Disconnect the device from the electrical power supply immediately.



WARNING
Electric shock caused by dangerous voltage inside

There are areas within the device where dangerous touch voltage may be present.

- Do not open the device or remove any covers.
- Do not operate the device if the covers are open.
- Disconnect the device from electrical power supply before service and maintenance, and when the device is not in use.



Attention
Power supply

- Before connecting the device 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 device.
- Make sure that the cross-sectional area of the extension cords and power cables is sufficient for the required power consumption of the device.



Attention
General safety

- Do not block the ventilation openings. Without proper heat dissipation and air circulation, the internal components may overheat. This can result in product damage.
- 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 an amplifier. 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 CA-4150 is a 4 x 150 W D-class amplifier with SMPS and with a configurable built-in crossover. It can be installed in a standard 19-inch rack.

3.1. Front View

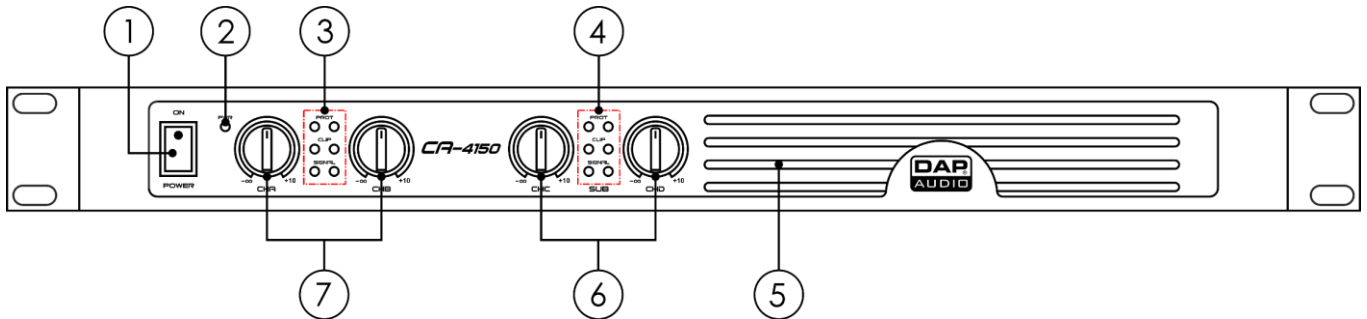


Fig. 02

- 01) Power switch
- 02) Power LED indicator (Blue)
- 03) PROT/CLIP/SIGNAL LED indicators (CH A/B)
- 04) PROT/CLIP/SIGNAL LED indicators (CH C/D)
- 05) Ventilation openings
- 06) Gain controls (CH C/D)
- 07) Gain controls (CH A/B)

3.2. Back View

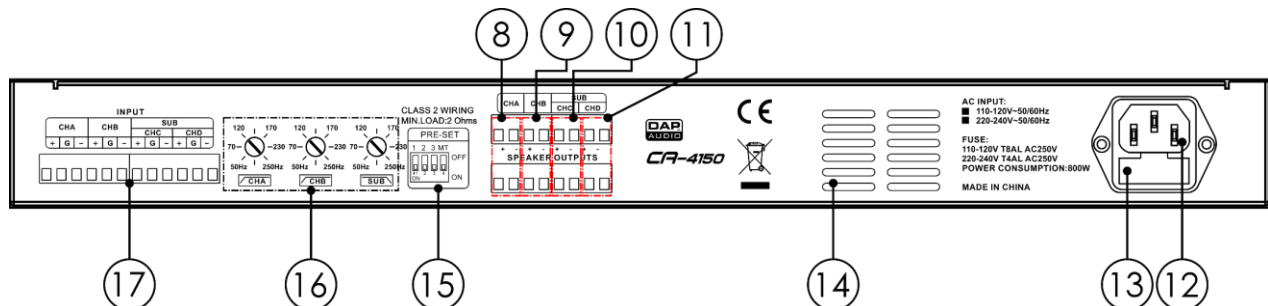


Fig. 03

- 08) 2-pin terminal CH A speaker connector OUT
- 09) 2-pin terminal CH B speaker connector OUT
- 10) 2-pin terminal CH C speaker connector OUT
- 11) 2-pin terminal CH D speaker connector OUT
- 12) IEC power connector IN
- 13) Fuse T5AL/250 V
- 14) Ventilation openings
- 15) Mode selector (DIP switches)
- 16) 3 x cutoff frequency selectors (CH A/B, SUB)
- 17) 2 x 6-pin terminal balanced signal connectors IN

3.3. Product Specifications

Model:	CA-4150
Electrical:	
Input voltage:	220–240 V AC, 50 Hz
Power consumption:	636 W
SMPS:	Yes
Fuse:	T5AL/250 V
Outputs:	
2 Ω stable:	Yes
Output power (8 Ω @ 1 kHz):	90 W (per channel)
Output power (4 Ω @ 1 kHz):	150 W (per channel)
Output power (2 Ω @ 1 kHz):	230 W (per channel)
Bridge output power (8 Ω @ 1 kHz):	190 W
Bridge output power (4 Ω @ 1 kHz):	275 W
Output power (8 Ω @ 20 Hz > 20 kHz):	90 W (per channel)
Output power (4 Ω @ 20 Hz > 20 kHz):	150 W (per channel)
Output power (2 Ω @ 20 Hz > 20 kHz):	230 W (per channel)
Bridge output power (8 Ω @ 20 Hz > 20 kHz):	190 W
Bridge output power (4 Ω @ 20 Hz > 20 kHz):	275 W
Output channels:	4
Output gain:	28 dB
Output mode:	4-channel, Bridge, Stereo
Output impedance:	Stereo: min. 4 Ω , Bridge: 8 Ω
Inputs:	
Mono inputs:	4
Mono input impedance	20000 Ω
Mono unbalanced input sensitivity:	1 dBV
Product properties:	
Electronic protection:	Clip limiter (fixed), DC voltage, Overheat, Overload, Short circuit, Softstart, Thermal
LED indicators:	Clip, Power, Protect, Signal
Flight case size:	19"
Audio Specifications:	
THD level:	< 0,1 %
Signal-to-noise ratio:	> 96 dB
Frequency response:	20–20000 Hz
Slew rate:	15 V/ μ s
Amplifier technology:	Class D
Cutoff frequency:	50–250 Hz
Damping factor:	180:1
Crosstalk:	70 dBu
Sound Editing:	
Crossover filter types:	Built-in crossover
Physical:	
Dimensions:	483 x 281 x 44,5 mm (L x W x H), 1 U
Weight:	4,85 kg

Connections:	
Power connections:	IEC power connector IN
Mono input connections:	2 x 6-pin terminal connector
Output connections:	4 x 2-pin terminal upper connectors 4 x 2-pin terminal lower connectors
Construction:	
Cooling:	Radial fan
Housing:	Metal
Color:	Black
IP rating:	IP20
Thermal:	
Max. ambient temperature t_a :	From -20 to 50 °C

3.4. Dimensions

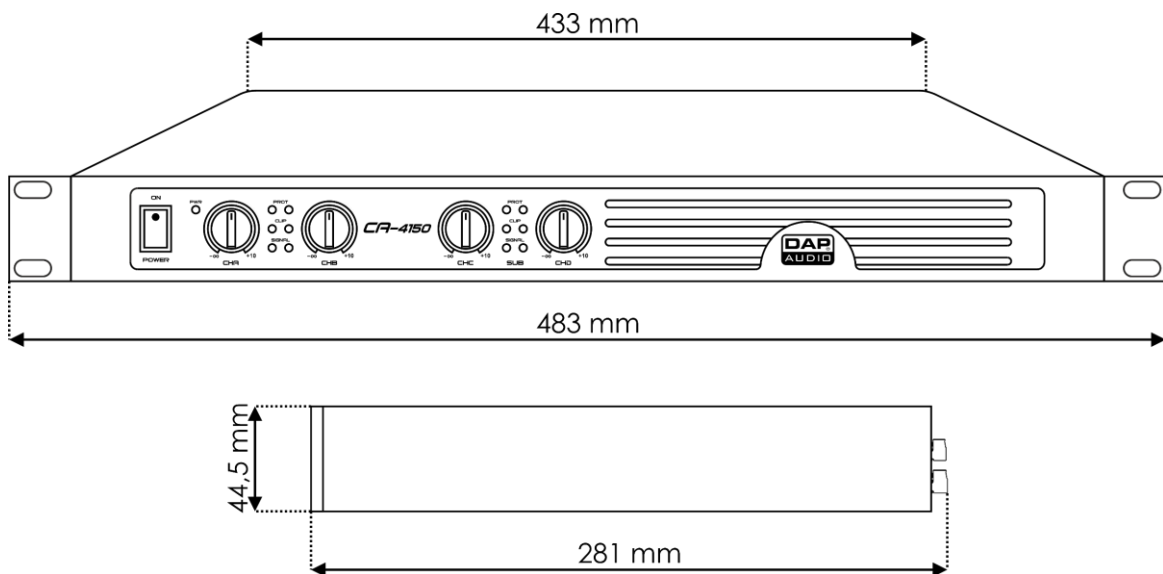


Fig. 04

4. Installation

4.1. Safety Instructions for Installation



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

- Do not block the ventilation openings. Without proper heat dissipation and air circulation, the internal components may overheat. This can result in product damage.
- Do not install near equipment that produces heat.

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 device must be installed away from heating sources.
- The maximum ambient temperature $t_a = 50\text{ °C}$ must never be exceeded.
- The relative humidity must not exceed 50 % with an ambient temperature of 50 °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 mounting openings 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.

4.4. Connecting to Power Supply



DANGER
Electric shock caused by short-circuit

The device accepts AC mains power at 220–240 V and 50 Hz. Do not supply power at any other voltage or frequency to the device.

This device falls under IEC protection class I. Make sure that the device is always electrically connected to the ground (earth).

Before connecting the device to the socket-outlet:

- Make sure that the power supply matches the input voltage specified on the information label on the device.
- Make sure that the socket-outlet has ground (earth) connection.

Connect the device to the socket-outlet with the power plug.

5. Setup and Operation

5.1. Warnings and Precautions



Attention
Connect all cables before supplying power.
Disconnect power supply before connecting or disconnecting cables.

For more information about the control modes, refer to **5.6. Setup Examples** on pages 11–19.



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

This device is intended for use as an amplifier. 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.



Attention Power supply

Before connecting the device 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 device.

5.2. Turning On/Off

The device has a power switch.

- Set the **power switch (01)** to ON position to turn on the device.
- Set the **power switch (01)** to OFF position to turn off the device.

Make sure that the device is turned off with the **power switch (01)** when the device is not in use.

5.3. Setting Gain

You can set gain for the channels A–D.

Turn the **gain controls (CH C/D) (06)** and **gain controls (CH A/B) (07)** to set the gain for each of the 4 channels (A–D). The adjustment range is from $-\infty$ to +10.

5.4. LED Statuses

There are the following LED indicators: **power LED indicator (Blue) (02)**, **PROT/CLIP/SIGNAL LED indicators (CH A/B) (03)** and **PROT/CLIP/SIGNAL LED indicators (CH C/D) (04)**. The LED indicators have the following functions:

- POWER: When the LED is blue, the device is turned on.
- PROT: When the LED is red, the amplifier is operating at its limits. Turn off the device and identify the problem. Decrease the source signal level and improve air circulation in the room where the device is installed.
- CLIP: When the LED is red, it indicates sound distortion. Decrease the source signal level until the LED turns off.
- SIGNAL: When the LED is green, the device is operating correctly.

5.5. Setting Cutoff Frequency

You can set cutoff frequency for hi-pass (CH A and CH B) and low-pass (SUB) filters.

Turn the 3 **cutoff frequency selectors (CH A/B, SUB) (16)** to set the cutoff frequency. The adjustment range is 50–250 Hz.

5.6. Setup Examples

Connect audio devices to the audio outputs and inputs.

- The device has the following audio outputs: **2-pin terminal CH A speaker connector OUT (08)**, **2-pin terminal CH B speaker connector OUT (09)**, **2-pin terminal CH C speaker connector OUT (10)**, **2-pin terminal CH D speaker connector OUT (11)**.
- The device has the following audio inputs: **2 x 6-pin terminal balanced signal connectors IN (17)**.

Note:

To avoid interference, turn the CA-4150 off when connecting devices.

Connect speakers to the **2-pin terminal CH A–D speaker connectors OUT (08/09/10/11)**. The upper and lower output connectors have the same function.

Connect the source signal to the **6-pin terminal balanced signal connectors IN (17)**. You can connect up to 4 source signals (A–D).

Select operation modes with the **mode selector (DIP switches) (15)**. There are 9 operation modes. To select operation modes, move the DIP switches of the **mode selector (DIP switches) (15)** to the correct positions. See the table below.

Operation Mode	DIP switches				Description
	#1	#2	#3	MT	
1	OFF	OFF	OFF	OFF	Ch A/B/C/D – all stereo
2	ON	OFF	OFF	OFF	Ch A/B/C/D – all parallel
3	OFF	ON	OFF	OFF	Ch A/B – bridge, Ch C/D – bridge
4	ON	ON	OFF	OFF	Ch A/B – parallel, Ch C/D – parallel
5	OFF	OFF	ON	OFF	Ch A/B – stereo, Ch C/D – bridge (full range)
6	ON	OFF	ON	OFF	Ch A/B – parallel, Ch C/D – bridge (full range)
7	OFF	ON	ON	OFF	Ch A/B – stereo, SUB (Ch C/D – bridge, Input = Ch C)
8	ON	ON	ON	OFF	Ch A/B – stereo, SUB (Ch C/D – bridge, Input = Ch A+B)
9	–	–	–	ON	Mute

5.6.1. Mode 1 – Ch A/B/C/D – All Stereo

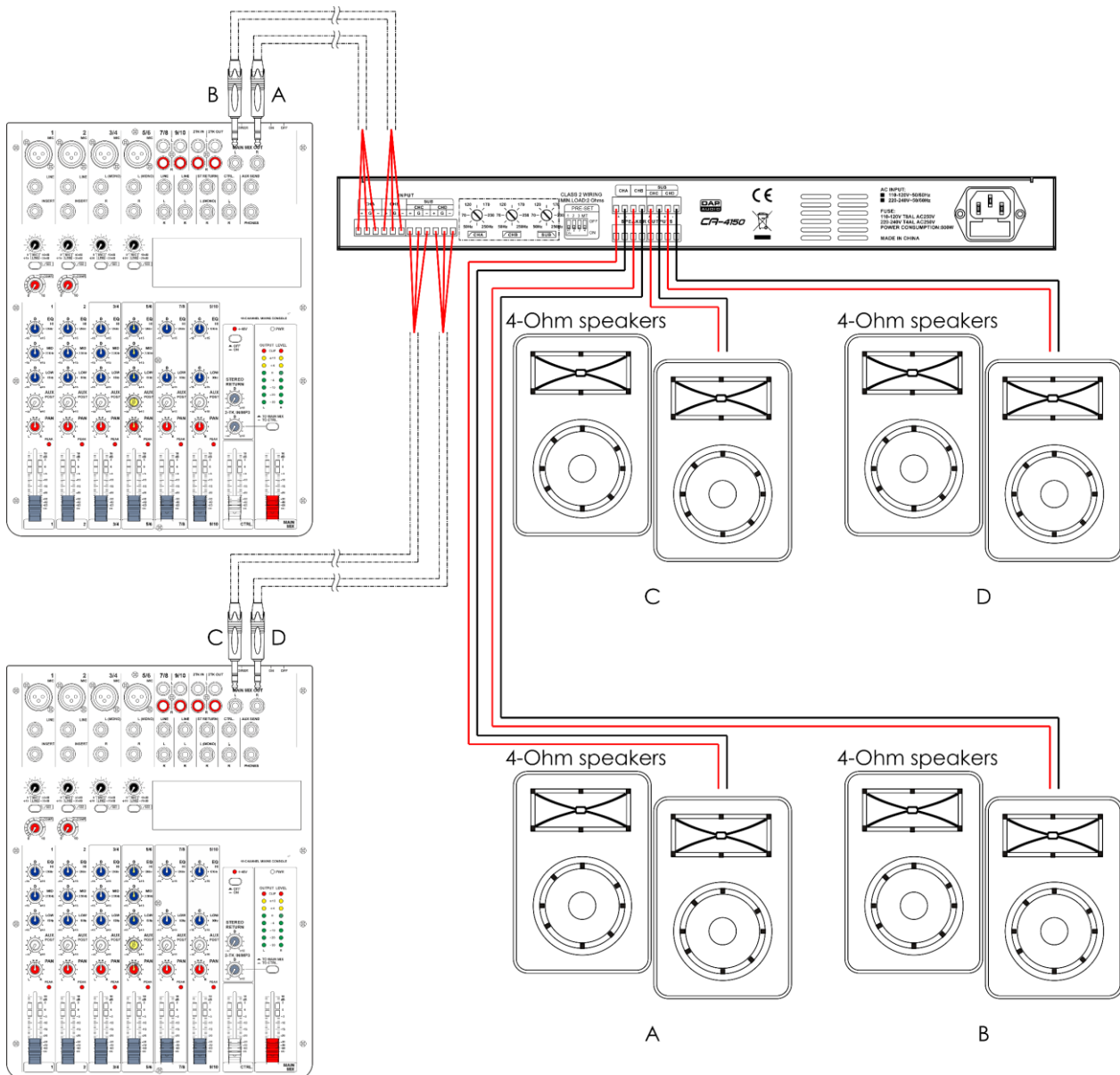


Fig. 05

5.6.2. Mode 2 – Ch A/B/C/D – All Parallel

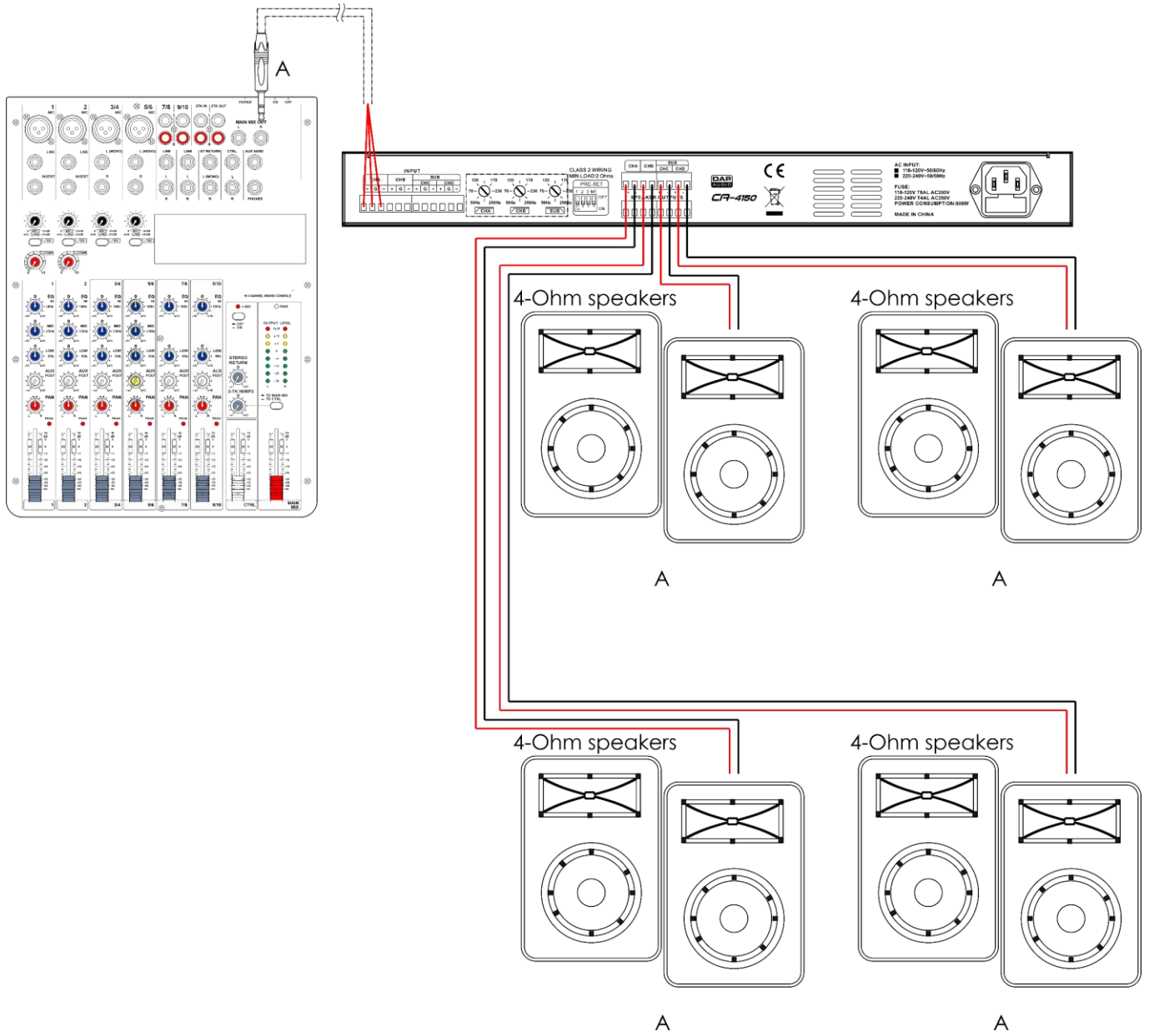


Fig. 06

5.6.3. Mode 3 – Ch A/B – Bridge, Ch C/D – Bridge

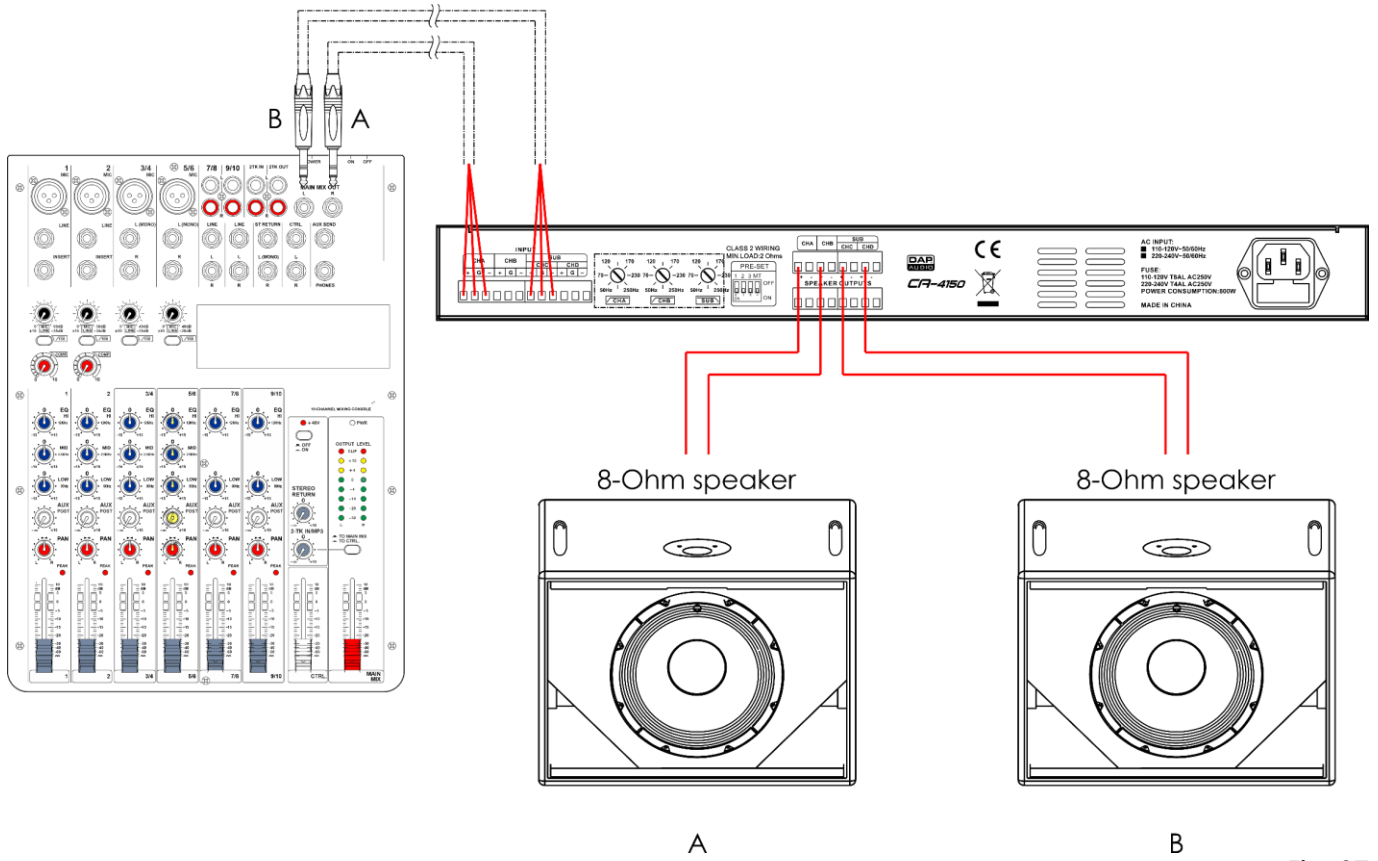


Fig. 07

5.6.4. Mode 4 – Ch A/B – Parallel, Ch C/D – Parallel

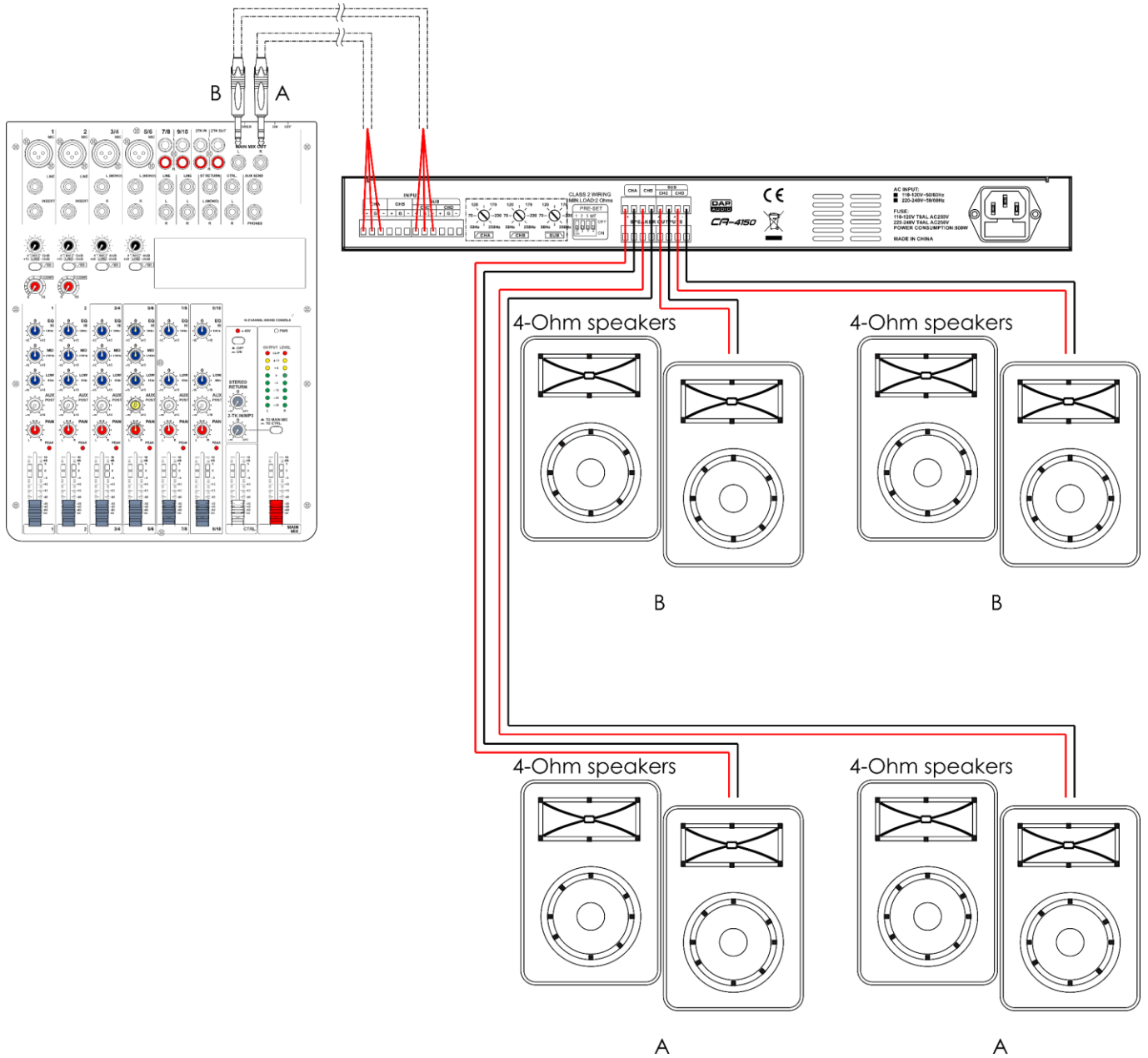


Fig. 08

5.6.5. Mode 5 – Ch A/B – Stereo, Ch C/D – Bridge (Full Range)

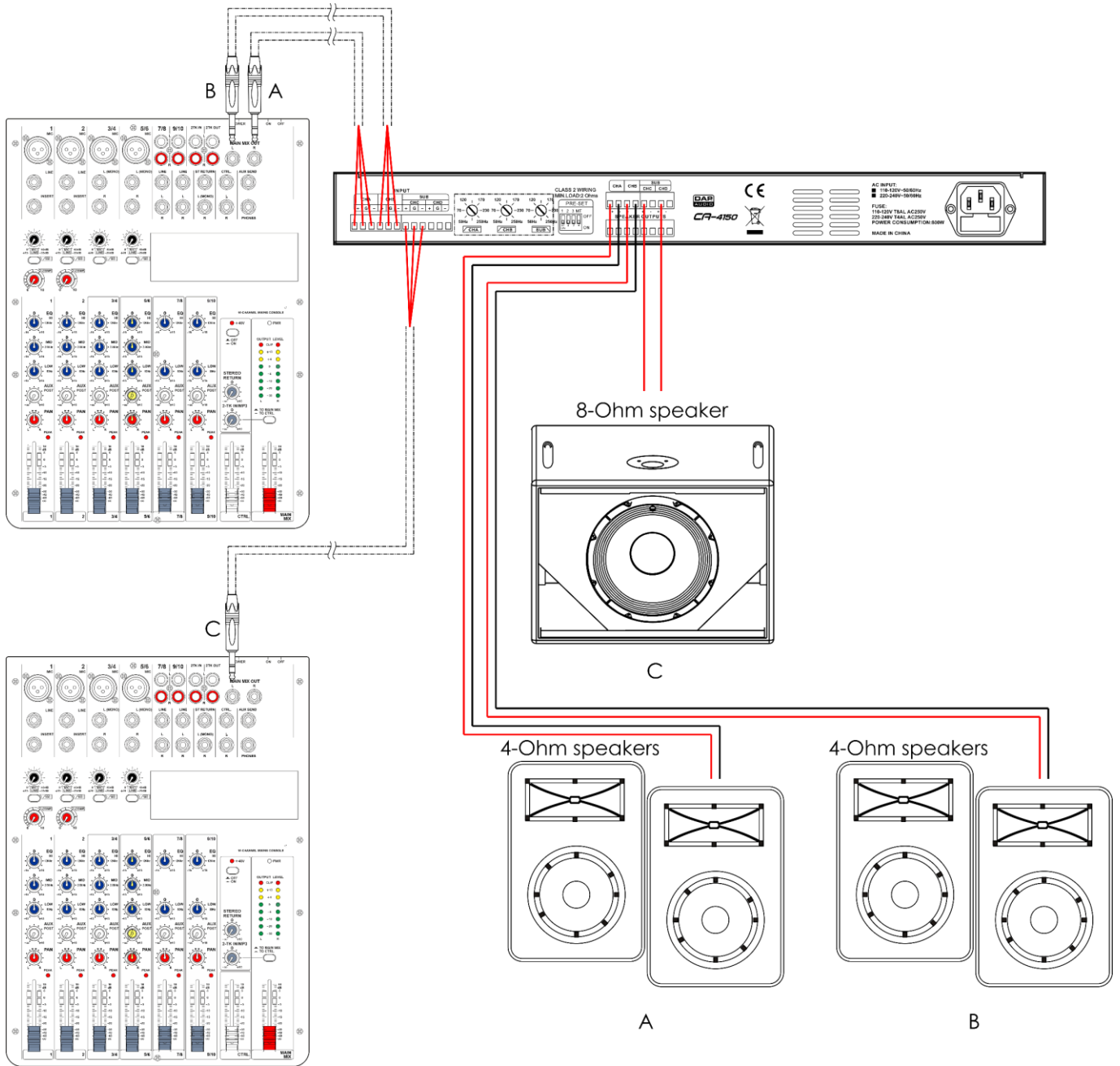


Fig. 09

5.6.6. Mode 6 – Ch A/B – Parallel, Ch C/D – Bridge (Full Range)

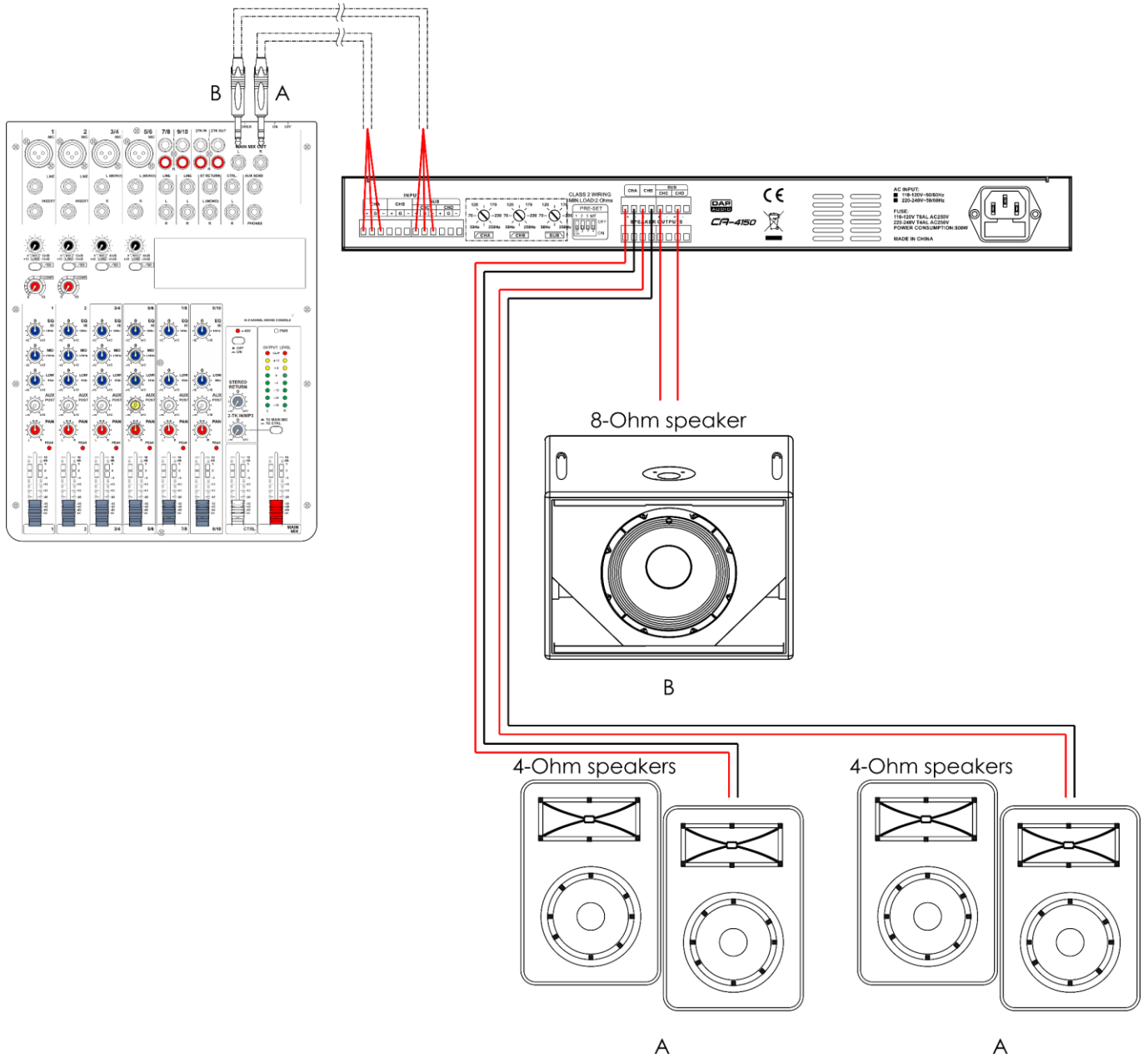


Fig. 10

5.6.7. Mode 7 – Ch A/B – Stereo, Sub (Ch C/D – Bridge, Input = Ch C)

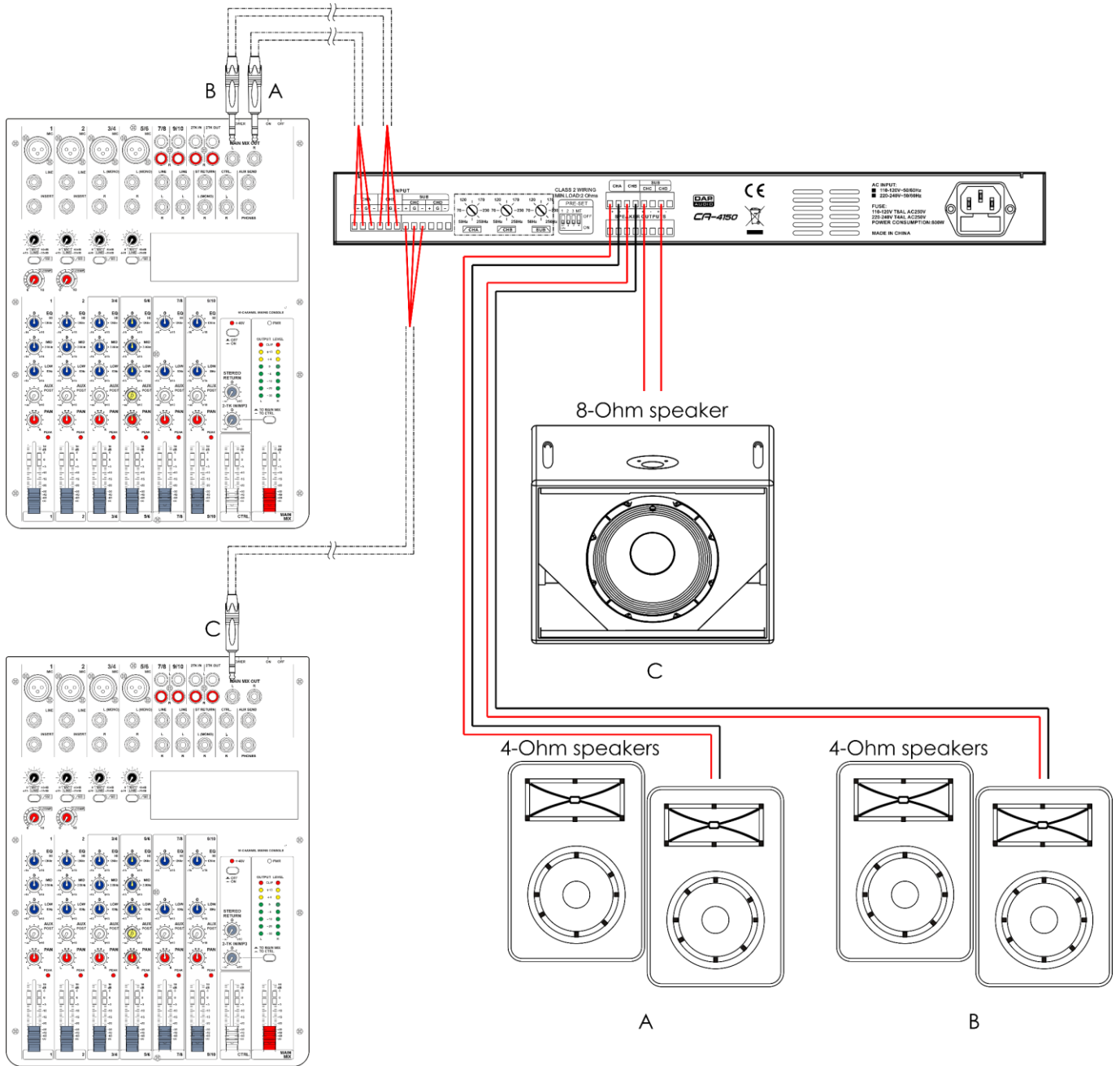


Fig. 11

5.6.8. Mode 8 – Ch A/B – Stereo, Sub (Ch C/D – Bridge, Input = Ch A+B)

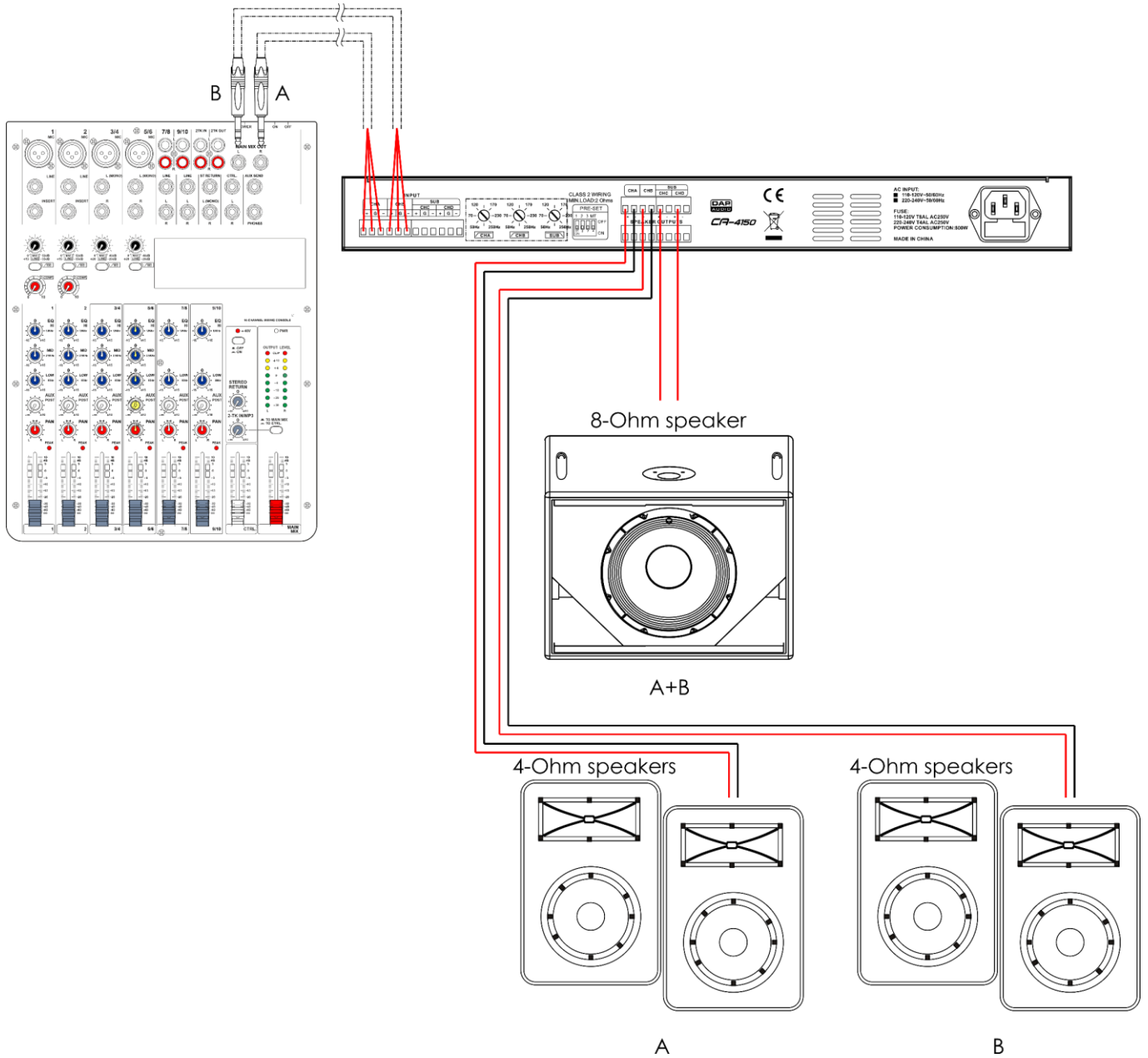


Fig. 12

6. 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
	Main fuse is blown	<ul style="list-style-type: none"> Replace the fuse. See 7.3.1. Replacing the Fuse on page 21
No sound	The volume is set to minimum	<ul style="list-style-type: none"> Increase the volume
	Bad connections	<ul style="list-style-type: none"> Check if the connections between the device and external devices are correct
Bursts of noise or other audible signals present	Sources of interference are present	<ul style="list-style-type: none"> Identify potential sources of interference and turn them off
The protection indicator LED (PROT) is on	The device is operating at its limits	<ul style="list-style-type: none"> Turn off the device and identify the problem Decrease the source signal level Improve air circulation in the room where the device is installed
The clipping indicator LED (CLIP) is on	Sound distortion	<ul style="list-style-type: none"> Decrease the source signal level until the LED turns off.

7. Maintenance

7.1. Safety Instructions for Maintenance



DANGER
Electric shock caused by dangerous voltage inside

Disconnect power supply before servicing or cleaning.

7.2. 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.

7.2.1. 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.

7.3. 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.

7.3.1. Replacing the Fuse



DANGER Electric shock caused by short-circuit

- Do not bypass the thermostatic switch or fuses.
- For replacement use fuses of the same type and rating only.

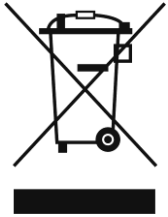
Power surges, short-circuit or incorrect electrical power supply may cause a fuse to burn out. If the fuse burns out, the device will not function anymore. If this happens, follow the steps below.

- 01) Disconnect the device from the electrical power supply.
- 02) Allow the device to cool down for at least 15 minutes.
- 03) Pry up the integrated fuse holder with a screwdriver and remove the fuse holder.
- 04) If the fuse is brown or unclear, it is burned out. Remove the old fuse.
- 05) Insert a new fuse in the fuse holder. Make sure that the type and the rating of the replacement fuse are the same as the ones specified on the information label of the product.
- 06) Replace the integrated fuse holder in the opening and push it gently back in its place.

8. 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 **7.2.1. Basic Cleaning Instructions** on page 21.
- Store the device in the original packaging, if possible.

9. 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.

10. 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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