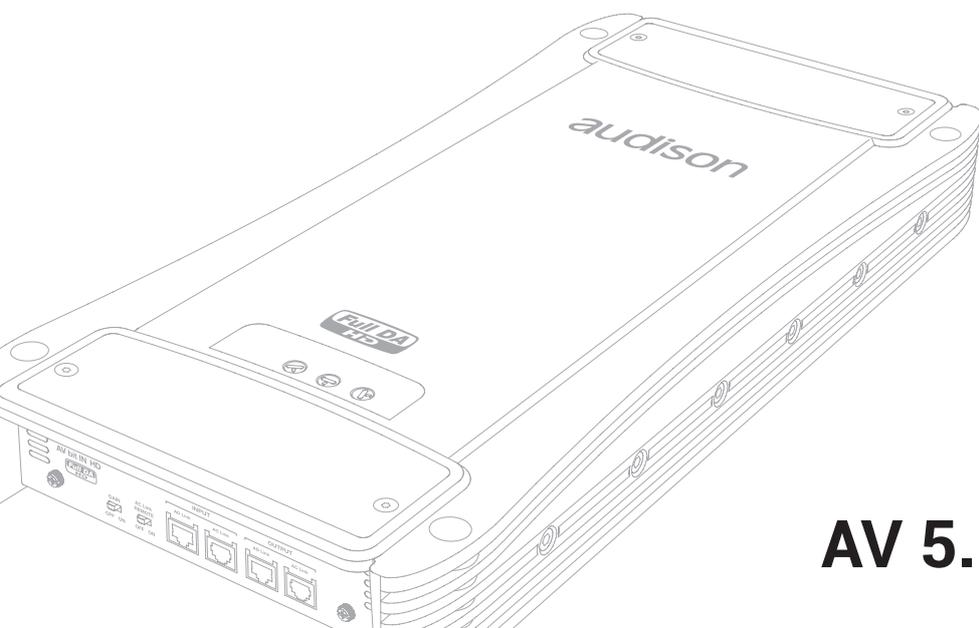


audison



AV 5.1k HD

USER'S MANUAL

rev. 1.0 a

I voce



www.audison.eu



ideato,
progettato,
ingegnerizzato
in Italia

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1. INTRODUCTION

Coming directly from the know-how of the exceptional Thesis line, Voce components takes the experience of listening in the car to a new level of excellence.

Project innovation, advanced design, benchmark performance; the synthesis of consolidated know-how applied to car audio systems. The Voce project was born to make Thesis sound quality available to a wider - but no less demanding - audience. The development of these components took advantage of the major innovations introduced while designing the Thesis line: analog and digital technologies combined using different classes of configuration for amplifiers, reduction of the main sources of non-linear distortion, linearization of acoustic and electric loads, control of cone and diaphragm resonance for speakers. To achieve these goals it was necessary to develop new circuit solutions, increase heat capacity, design new moulds for baskets and diaphragms and define new assembly procedures and quality control.

A delicate balance of analysis and refinement led us to results exceeding our expectations and set a new benchmark for the category.

THE AV 5.1K AMPLIFIERS PROJECT

AV 5.1k HD, 1650W (RMS) total, 5-channel power audio amplifier: hybrid design made up of two 75 W A Class channels, two 250 W AB Class channels and one 1000 W D Class channel.

This unique combination of technologies, each especially suitable for one specific audio section, makes the **AV 5.1k HD** amplifier the perfect choice to build active two-way Front systems: Tweeter/MID-Tweeter (A Class) + Woofer (AB Class) e Subwoofer (D Class), or Front + Rear + Subwoofer systems.

AV 5.1k HD is the first Car Audio amplifiers featuring digital inputs only, providing the ability to connect directly to the digital outputs of a digital signal processor (DSP).

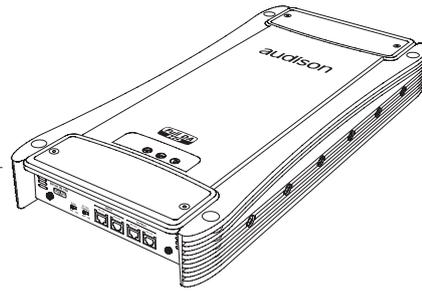
Through this connection, made via the Audison AD Link available on the Audison processors (bit One, bit Ten D), a Full DA HD audio chain can be created. Thanks to this chain, the high resolution (96kHz/24 bit) digital audio signal coming from the head unit, via the processor, can be obtained up to just the Digital/Analog converter of the amplifier's audio chain, ensuring maximum reduction of any signal deterioration.

Thanks to its input connectivity, the Audison AC Link can also be connected to control the amplifier as well as the AC Link and AD Link outputs, to expand the audio system with other **Audison Voce** amplifiers.

These features make **AV 5.1k HD** the most advanced amplifier available in the market, perfect to appreciate the quality of Hi-Res audio files.

2. PACKAGING CONTENT

- AV 5.1k HD amplifier



- Quick start guide



- Warranty



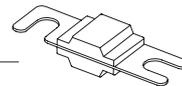
- nr.4 3,9 x 25mm / 0,15" x 0,99 self-tapping cross-headed fixing screws



- N. 1 Allen wrench 0,118"



- nr.1 100A AFS spare fuse.



- CD ROM with:
This Owner's Manual (.pdf format)
Test tracks



3. SAFE SOUND

AUDISON AMPLIFIERS CAN BE PART OF A HIGH POWER AUDIO SYSTEM THAT CAN GENERATE VERY HIGH UNDISTORTED SOUND PRESSURE LEVELS. PLEASE REMEMBER THAT LONG EXPOSURE TO AN EXCESSIVELY HIGH SOUND PRESSURE LEVEL MAY DAMAGE YOUR HEARING; THEREFORE, PLEASE USE COMMON SENSE AND PRACTICE SAFE SOUND.



Safety must be at the forefront while driving. The listening volume should never obscure the noise coming from the outside of your vehicle; you should be able to hear the sounds generated by your vehicle in order to promptly face any emergency situation.

To achieve the best possible performance from your new components, we recommend you follow the instructions in this manual carefully. In order to design and create top level car hi-fi systems you need to understand automobile mechanical and electrical issues very well; if you think you lack the required knowledge or the proper tools, please consult with a specialized installer.

A professional installation will ensure your system delivers all the performance you have paid for, without affecting the safety and reliability of your vehicle.

This manual has been designed to provide you with the basic instructions required to install and use this product. However, the range of possible applications is very wide; to obtain further information, please contact your authorized Audison dealer or Audison service center.

You can also send an e-mail directly to the following addresses:

Italy - supporto.tecnico@elettromedia.it

Worldwide - support@elettromedia.it

4. GENERAL PRECAUTIONS



- This symbol indicates that you have to pay attention to these instructions. Disregarding them might cause accidental harms or damage your amplifier.
- Before installing the amplifier, make sure you carefully read and understand all instructions.
- The vehicle electric system must have 12V DC voltage with negative to ground. Make sure your car has it in order to avoid any damages to your amplifier and to the vehicle.
- Pre-plan the configuration of your new amplifier and the best wiring routes to ease installation.
- Always wear protective eyewear when using tools that may generate splinters.
- During installation, keep the amplifier in its packing as long as possible; this will protect it from damages.
- Secure all auxiliary devices you built to install the components to the vehicle structure through brackets, screws, nuts and bolts; this insures stability and safety while driving.
- The amplifier detachment while driving can damage the people in the vehicle and other cars. Secure the amplifier at best, paying utmost attention if installation is inside the passenger's compartment. Do not carry out any installation inside the engine compartment.
- Before installing the amplifier, turn off the source and all other electronic devices in the audio system for preventing any damages.
- Make sure the location you chose for the components does not affect the correct functioning of the vehicle mechanic and electric devices.
- Do not run the cables or install the amplifier next to electronic gearcases.
- Use extreme caution when cutting or drilling the car plate, checking there are no electrical wiring or structural element underneath.
- Before connecting the power cable to the amplifier, disconnect the negative lead (-) from the car battery.
- Make sure power cable is not short circuited during installation and connection.
- Power cable must have mechanically resistant and self-extinguishing insulation. Its section have a size corresponding with what is suggested in this manual. Avoid to run it over or through sharp edges or close to moving mechanical devices. Make sure it is well fixed all along its length. Block positive and negative cables just close to the amplifier respective power supply terminal blocks through a clamping screw.
- Use rubber grommets to protect the wire if it runs in a hole of the plate or proper materials if it is close to heat-generating parts.
- To ground the device (-) in the right way, use a screw in the vehicle chassis; scrape all paint or grease from the metal if necessary, checking with a tester that there is continuity between the battery negative terminal (-) and the fixing point. If possible, connect all components to the same ground point; this solution rejects most noise.
- Route all signal cables away from power cables.
- Never run cables outside the vehicle; you would not be protected against wear and in case of accidents.
- When installing speakers and the cables that connect them, make sure that non-insulated parts never touch, even occasionally, the vehicle cutting parts. If they do, the amplifier protection is activated.
- To prevent all problems, use very good quality cables, connectors and accessories, choosing them in Connection catalogue.
- When installation is over, and before plugging the main power supply fuse, check the system wiring and make sure all connections were done in the right way.
- Power amplifiers put an increased load on the battery and on its charging system. We recommend checking your alternator and battery condition to ensure they can handle the increased consumption. Standard electrical systems which are in good condition should be able to stand this extra load without problems but we recommend the use of an energy storage capacitor and/or a battery for high level audio systems.
- Put a fuse and its insulated fuse holder 40 cm max. far from the battery positive terminal; connect one end of the power cable to it after connecting the other end to the amplifier. The fuse value must be 50% higher than the amplifier built-in one. In case the cable supplies several amplifiers, the fuse value will have to be 50% higher than the sum of the values of all other fuses in the amplifiers.
- There must be good air circulation where the amplifier is installed; this area must not be affected by humidity, rain, external deposits or parts coming from the vehicle mechanical devices. Do not hinder in any way the cooling of the amplifier side fins
- Install the amplifier in the vehicle parts where temperature is between 0°C (32°F) and 55°C (131°F).

WARNING: When working in demanding conditions, the amplifier can reach temperatures of around 80 - 90°C (176 ÷ 194°F).

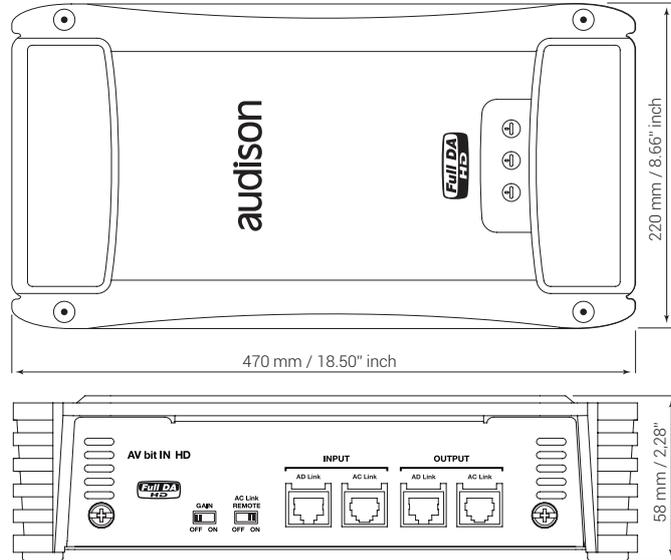


Make sure it is not dangerously hot before touching it.

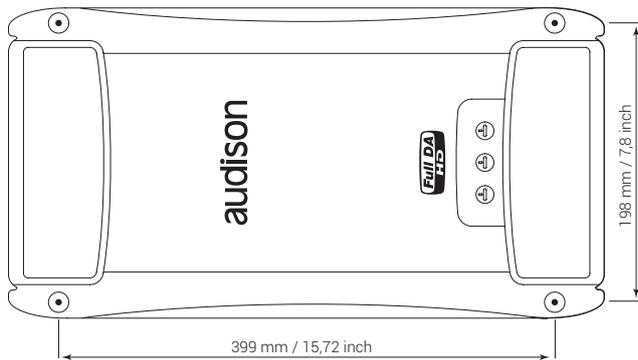
- Periodically clean the amplifier without using aggressive solvents that might damage it. Dampen a piece of cloth with water and soap, wring it and clean the amplifier. Then use a piece of cloth dampened with water only; eventually clean the amplifier with a dry piece of cloth.
- Remove dust and solid deposits from the heat sink side fins. Don't use compressed air on the amplifier since it would push solid parts in the amplifiers. If necessary, please contact a specialised service centre for internal cleaning. Cooling system obstruction makes the amplifier go in safety mode.

5. INSTALLATION

External size

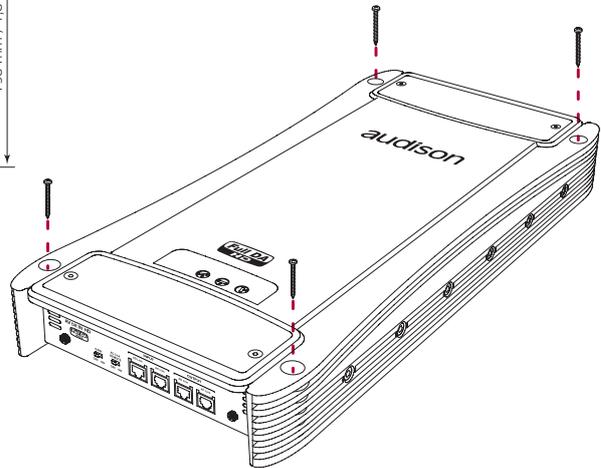


Mounting size

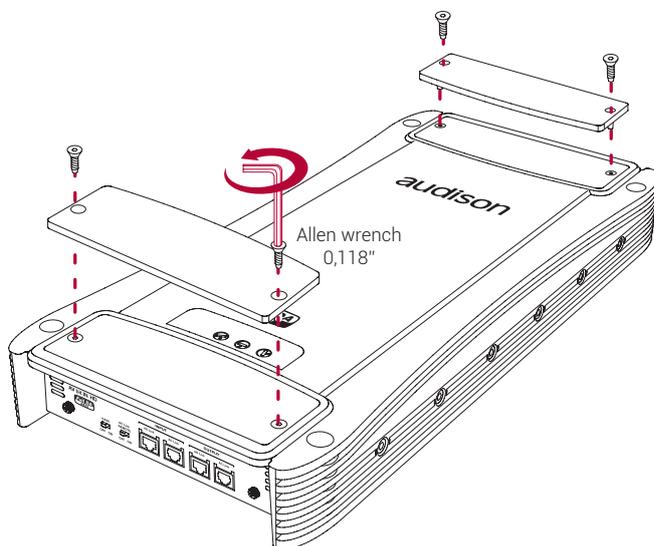


How to mount

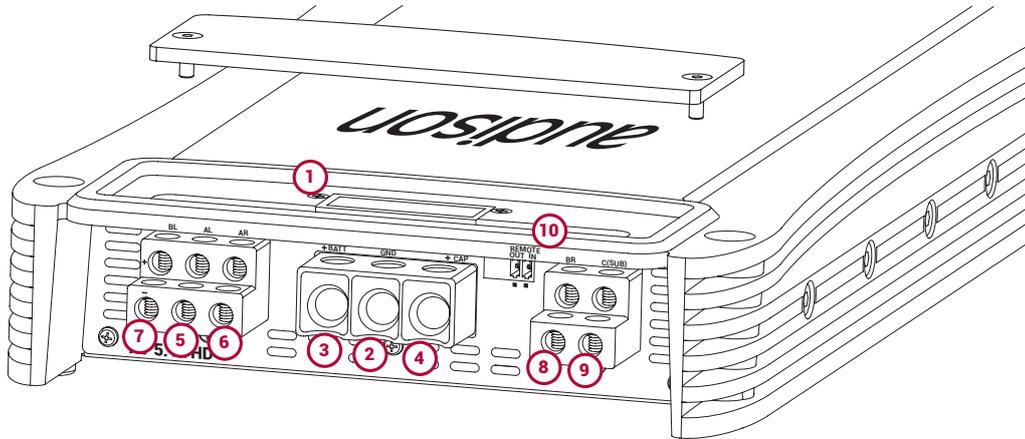
self-tapping screw 3,9 x 25 mm / 0,15" x 0,99



How to remove the panel

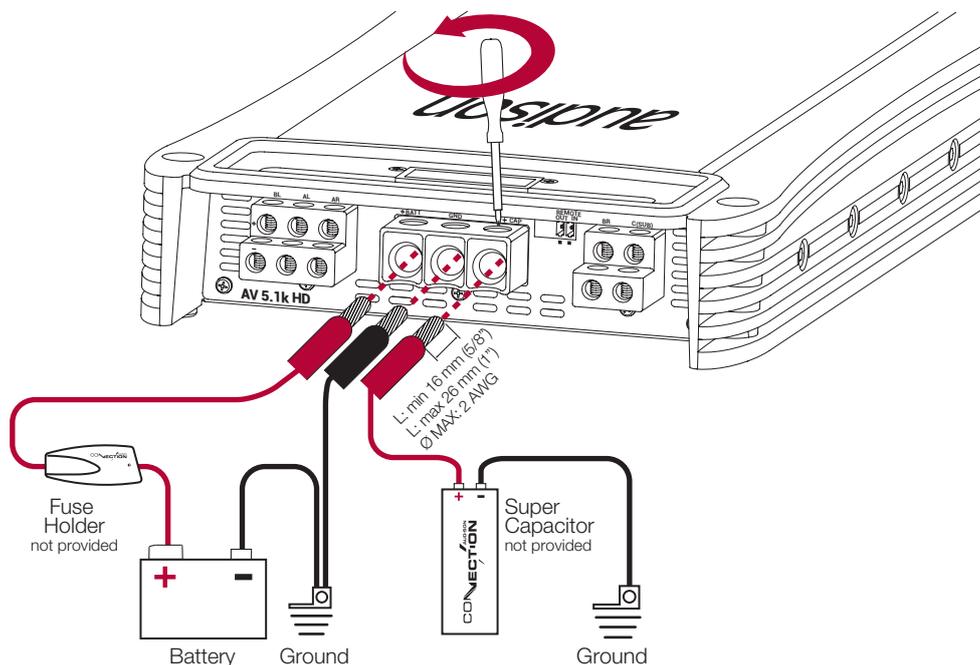


6. REAR PANEL

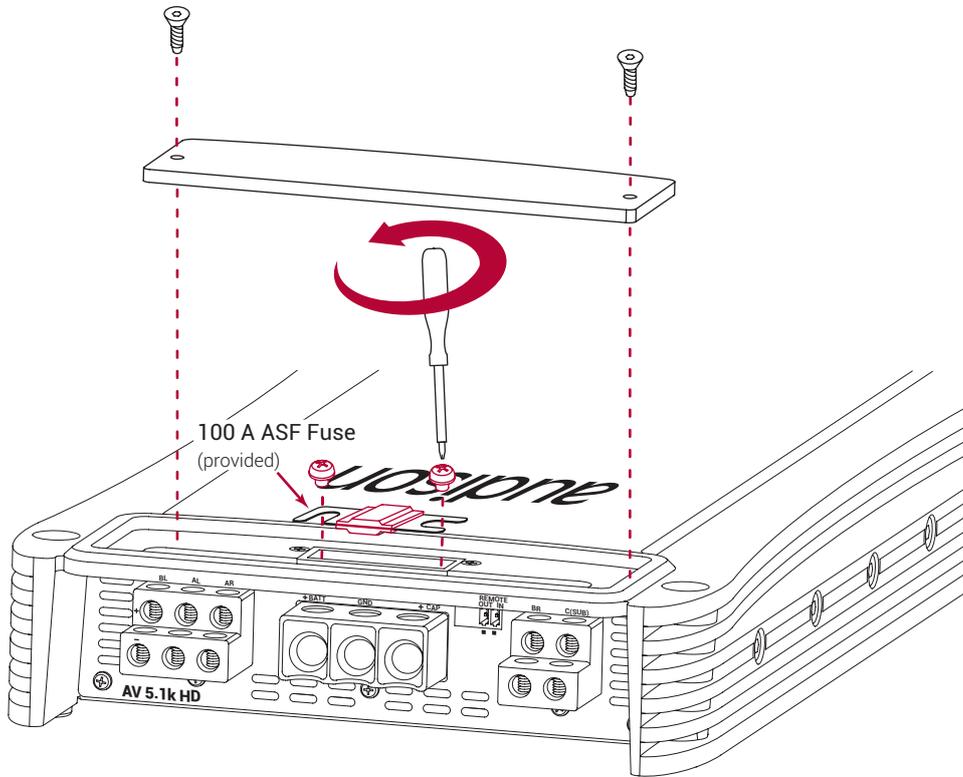


1. Protection fuse: 100 A;
2. Power (Ground): Terminal block for the amplifier power supply negative pole connection. Insert here the battery negative cable or wire connected to the vehicle chassis. The plug accepts cables up to 2 A.W.G. For better current transfer it is recommended to use cables with the maximum cross-section possible and in any case of the same cross-section of the cable connected to the positive pole;
3. Power (11-15 VDC): Terminal block for the amplifier 11÷15V DC power supply positive pole connection. Insert here the battery positive cable. The plug accepts cables up to 2 A.W.G. For better current transfer it is recommended to use cables with the maximum cross-section possible and in any case of the same cross-section of the cable connected to the negative pole;
4. +CAP: Terminal for connecting the positive pole of an external super capacitor;
5. +/- Left A Speaker Out;
6. +/- Right A Speaker Out;
7. +/- Left B Speaker Out;
8. +/- Right B Speaker Out;
9. +/- SUB OUT Speaker;
10. Remote IN/OUT:
 REMOTE IN: terminal for the remote cable coming from the device which turns on the amplifier. REMOTE OUT: terminal to launch the remote voltage to turn on other amplifier. The output voltage is 12V 50 mA.

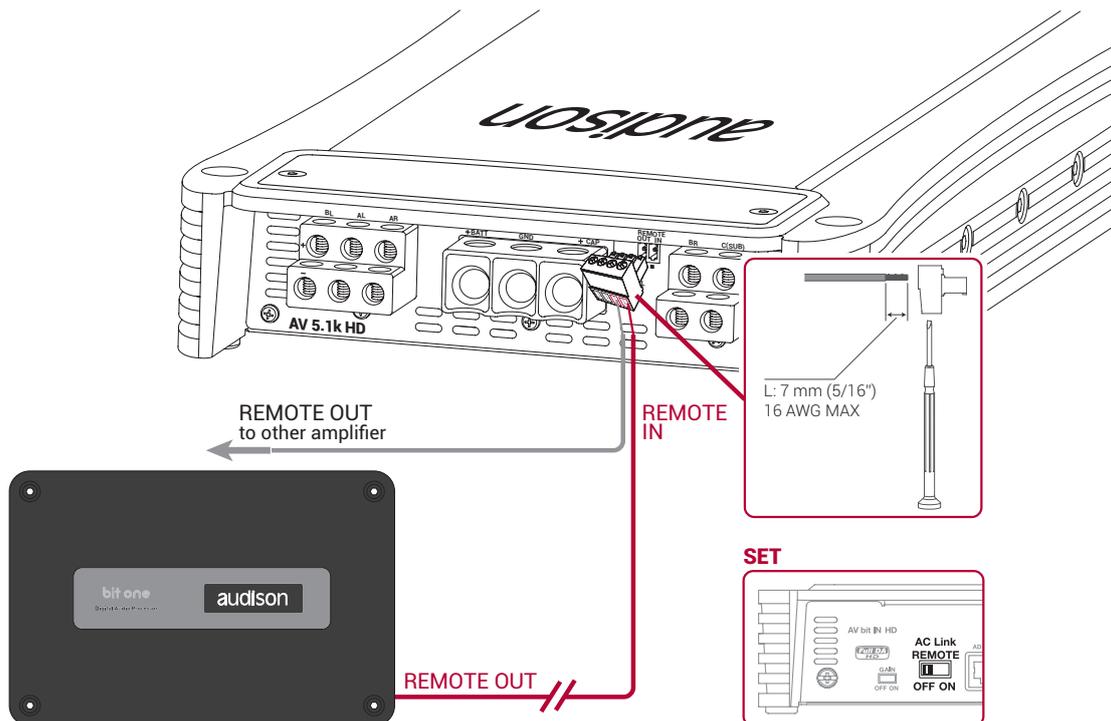
6.1 HOW TO CONNECT POWER CABLES



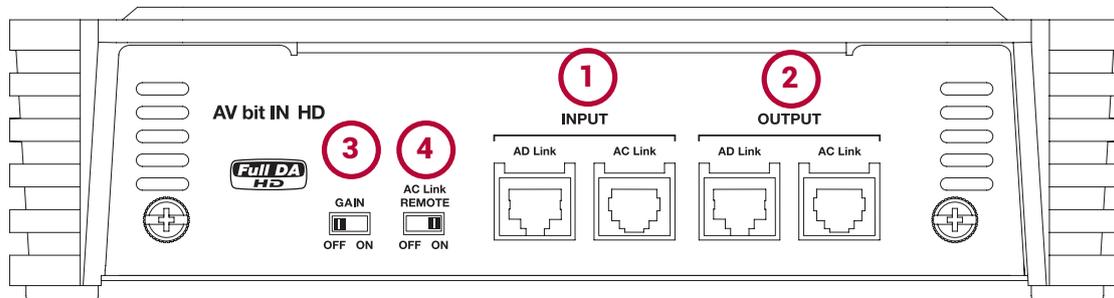
6.2 HOW TO REPLACE THE FUSE



6.3 HOW TO CONNECT THE REMOTE IN (only with Audison bit One processor)



7. FRONT PANEL



1. INPUT:

AD Link IN: RJ-45 input terminal to connect a digital signal coming from other AV/TH amplifiers or other external Audison bit devices equipped with AD Link. Use a Class 5 or 6 shielded cable for Ethernet networks normally used in computer networks. This digital audio bus can transmit the signal of 8 channels.

AC Link IN: RJ-12 input terminal for connection to the processor or other devices located upstream of the system. It is composed of a digital bus and control signals for the management of the functions of the device to which it is connected. It provides the ability to build a digital network interacting with other devices provided with AC Link such as AV / TH amplifiers, and Audison bit digital audio processors. The RJ-12 terminated cable is a 6-pin cable, like the one normally used for digital telephone purposes, but it is not compatible with digital telephone technology.

2. OUTPUT:

AD Link OUT: RJ-45 output terminal for connection to external devices capable of receiving the AD Link digital signal (AV / TH amplifiers).

AC Link OUT: RJ-12 input terminal for connection to the other devices located downstream of the system. The AC Link connection is able to provide power to the external device.

3. GAIN: set switch to ON to enable the amplifier's input level control. Set switch to OFF (recommended), to disable the amplifier's input level control.

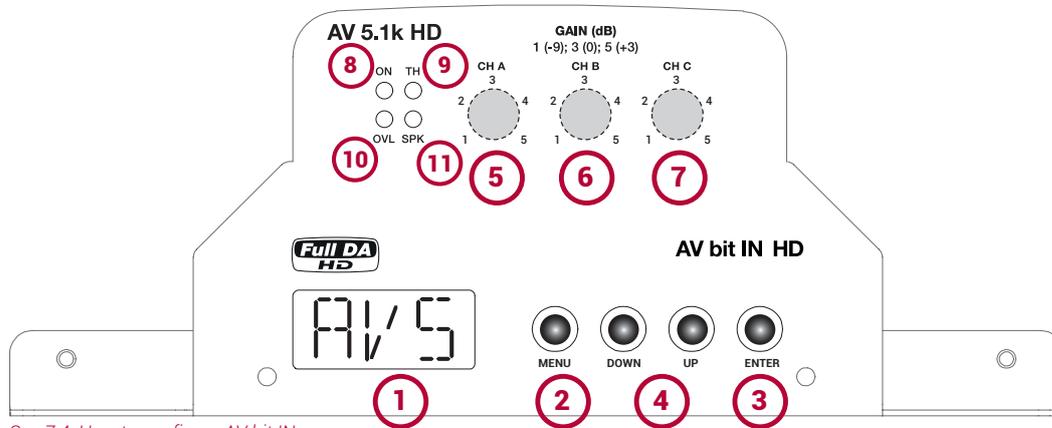
WARNING: *adjusting the sensitivity level affects the system Signal/Noise ratio (hiss / background noise). It is always advisable to set a high level output on the processor and a low gain on the amplifiers or to disable the gain adjustment (set the switch "Gain" to OFF), for the amplifiers to be less sensitive to hisses / background noises.*

4. AC Link-Remote OFF-ON: set switch to ON if the AV 5.1k HD amplifier is connected to a bit Ten D processor, that will make the amplifier turn on without using the Remote-In control. Set switch to OFF if the AV 5.1k HD is connected to a bit One processor. In that case, the Remote-In function on AC Link is not available and the amplifier will have to be turned on via the Remote-In. If an amplifier different from the AV (Thesis TH) is in the AC Link chain, the Remote-In function on AC Link will have to be disabled, setting the switch to OFF.

WARNING: *for AC Link / AD Link connections, only use the cables supplied with the products.*



7.1 CONTROL PANEL DISPLAY

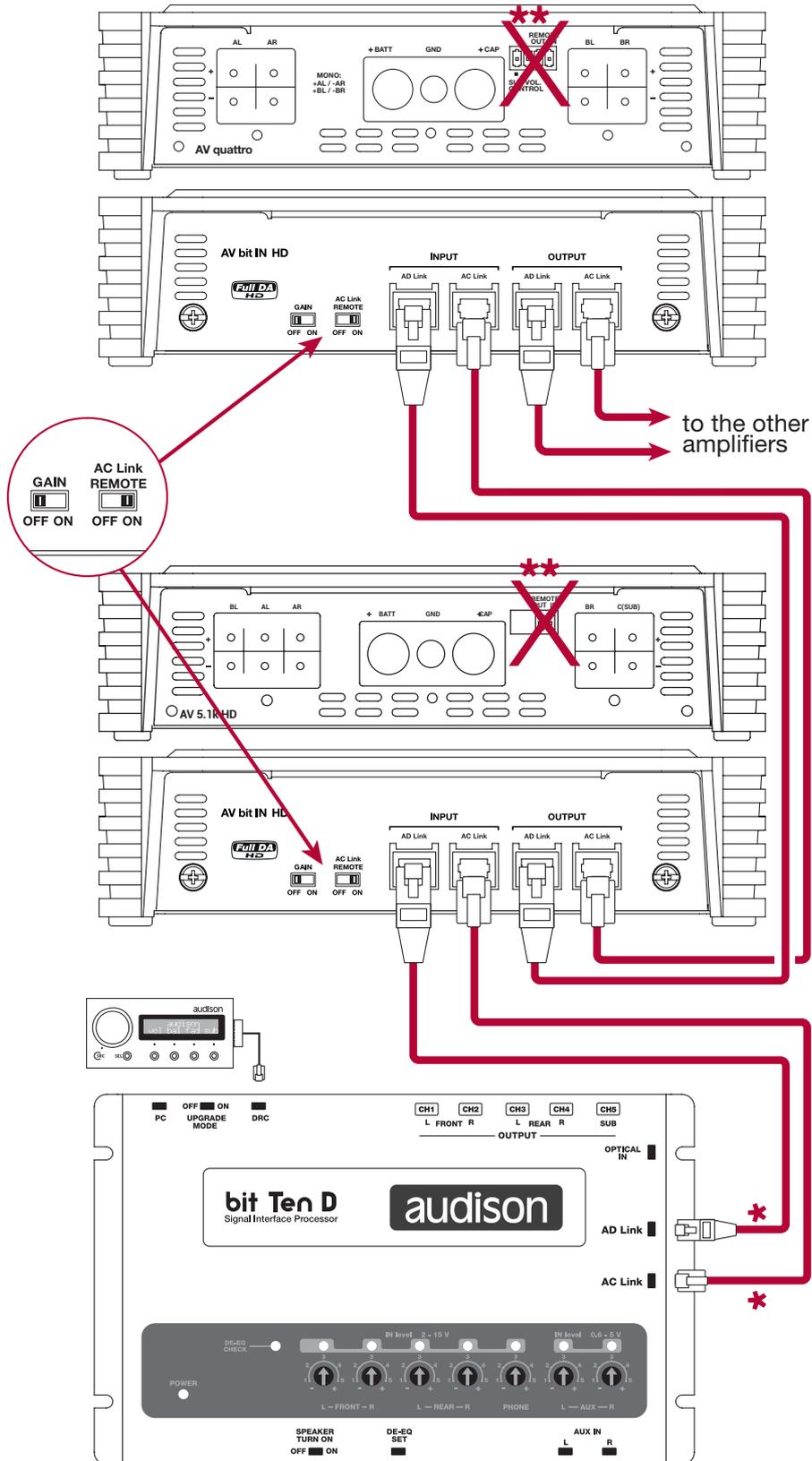


See 7.4: How to configure AV bit IN

1. **AV bit IN HD STATUS DISPLAY:** This is the visual element of the AV bit IN HD system with a 3-character backlit LCD. While operating it can display all configuration parameters stored in the amplifier during the installation. The following pages contain all the messages and statements that may appear on the display from time to time (see section 7.4)
 2. **MENU:** This button activates the AV bit IN HD and shows the first entry available. Each time you press this button while normally operating the amplifier, AV bit IN HD shows the first entry available and not the last entry on which you worked (see section 7.4). At any point, if you press the MENU key you exit from AV bit IN management and automatically return to the home screen (default display) without saving your changes.
- Note:** At any point, if you do not touch the keys for 5 seconds, AV bit IN HD will automatically return to the home screen (default display) without saving your changes.
3. **ENTER:** This button is used to (see section 7.4):
 - Confirm the selected entry,
 - Save it,
 - Go to the next menu entry.
 4. **UP - DOWN:** These buttons allow navigation through the available entries of various menus. Depending on the function, you can change the selection and then confirm by pressing the ENTER key (see section 7.4).
 5. **CH A LEVEL (-9dB ÷ +3dB)*:** CH A input sensitivity control, enabled with switch GAIN set to ON (see section 7). If the potentiometer is set to position 1, the amplifier sensitivity level will be equal to -9dB; if set to position 3, the amplifier sensitivity level will be equal to 0dB; if set to position 5, the amplifier sensitivity level will be equal to +3 dB.
 6. **CH B LEVEL (-9dB ÷ +3dB)*:** CH B input sensitivity control, enabled with switch GAIN set to ON (see section 7). If the potentiometer is set to position 1, the amplifier sensitivity level will be equal to -9dB; if set to position 3, the amplifier sensitivity level will be equal to 0dB; if set to position 5, the amplifier sensitivity level will be equal to +3 dB.
 7. **CH C LEVEL (-9dB ÷ +3dB)*:** CH C input sensitivity control, enabled with switch GAIN set to ON (see section 7). If the potentiometer is set to position 1, the amplifier sensitivity level will be equal to -9dB; if set to position 3, the amplifier sensitivity level will be equal to 0dB; if set to position 5, the amplifier sensitivity level will be equal to +3 dB.
 8. **POWER ON:** The green LED indicates that the amplifier is on. If LEDs 12, 13, 14 and 15 are simultaneously lit, the amplifier will turn off and it will be necessary to contact a service centre.
 9. **THERMAL:** The red LED indicates the amplifier temperature. It flashes at 60°C and the output power is limited by 1.5 dB. The flashing frequency increases around 70°C where the output power is limited by 3 dB. The LED lights up without flashing at about 80°C when the amplifier thermal protection starts operating. The amplifier will restart at about 70°C.
 10. **OVERLOAD:** The orange LED indicates an output overload. It flashes when the output load drops below the minimum permitted, allowing the amplifier to operate at a lower power. If the load drops below about 0.5 Ω impedance, the LED will turn on without flashing and activate the amplifier protection. If when listening to music the sound stops for a while, check if the orange LED flashes; it means there was an overload. Turn the amplifier off and check speakers and wiring.
 11. **SPEAKER:** The yellow LED indicates a fault in the speaker connection. It turns on when a speaker terminal short-circuits with the vehicle chassis. If when listening to music the sound stops for a while, check if the yellow LED flashes; it means there was a short-circuit between a speaker terminal and the vehicle chassis. Turn the amplifier off and check speakers and wiring.

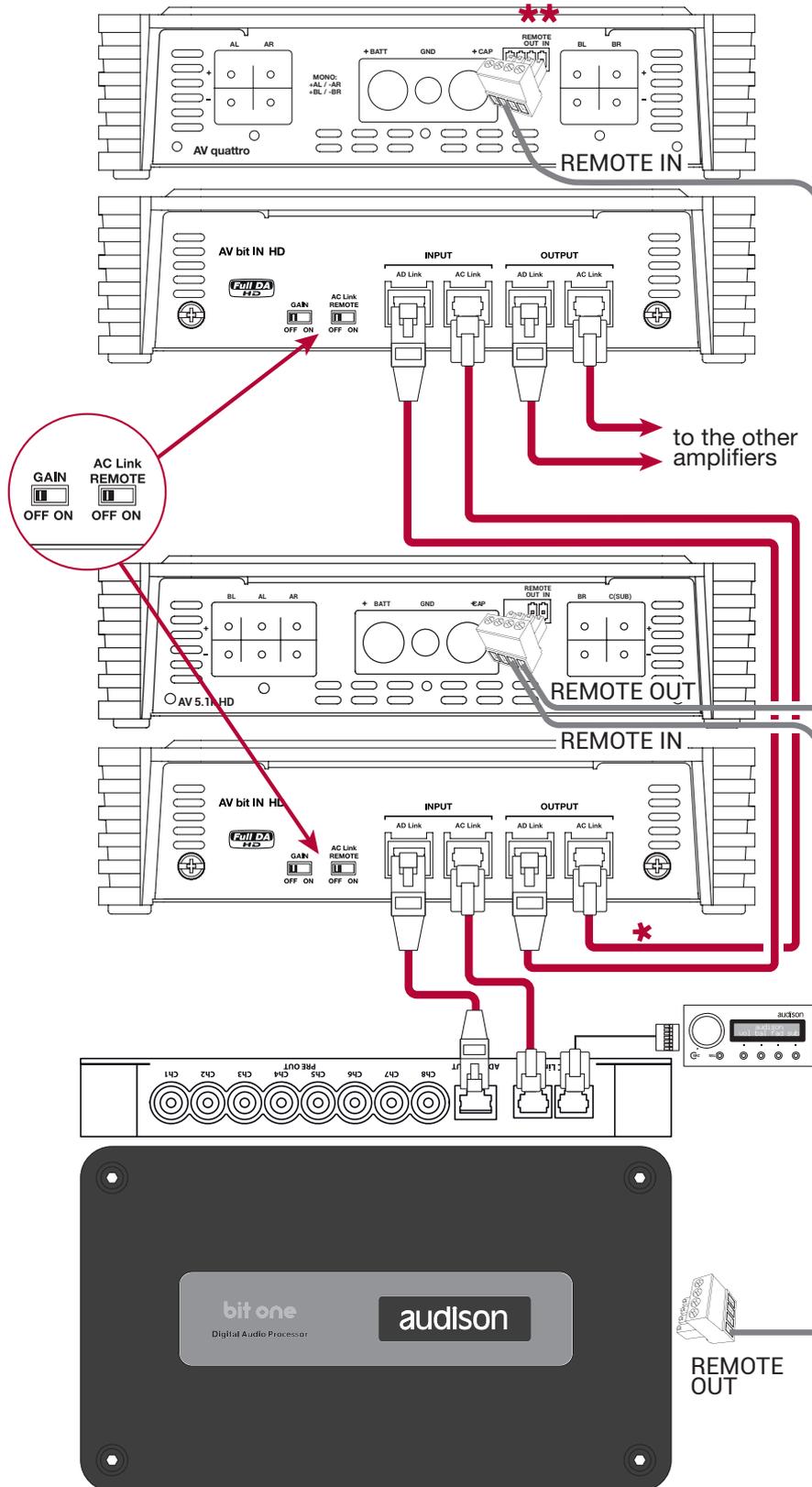
***WARNING:** adjusting the sensitivity level affects the system Signal/Noise ratio (hiss / background noise). It is always advisable to set a high level output on the processor and a low gain on the amplifiers or to disable the gain adjustment (set the switch "Gain" to OFF), for the amplifiers to be less sensitive to hisses / background noises.

7.2 HOW TO CONNECT THE AMPLIFIER TO AN AUDISON bit Ten D PROCESSOR



- * Use AC Link / AD Link cables supplied with the products.
- ** Don't connect the remote input signal to the amplifiers when using AV bit IN HD module.

7.3 HOW TO CONNECT THE AMPLIFIER TO AN AUDISON bit One PROCESSOR



* Use AC Link / AD Link cables supplied with the products.

7.4 HOW TO CONFIGURE AV bit IN HD

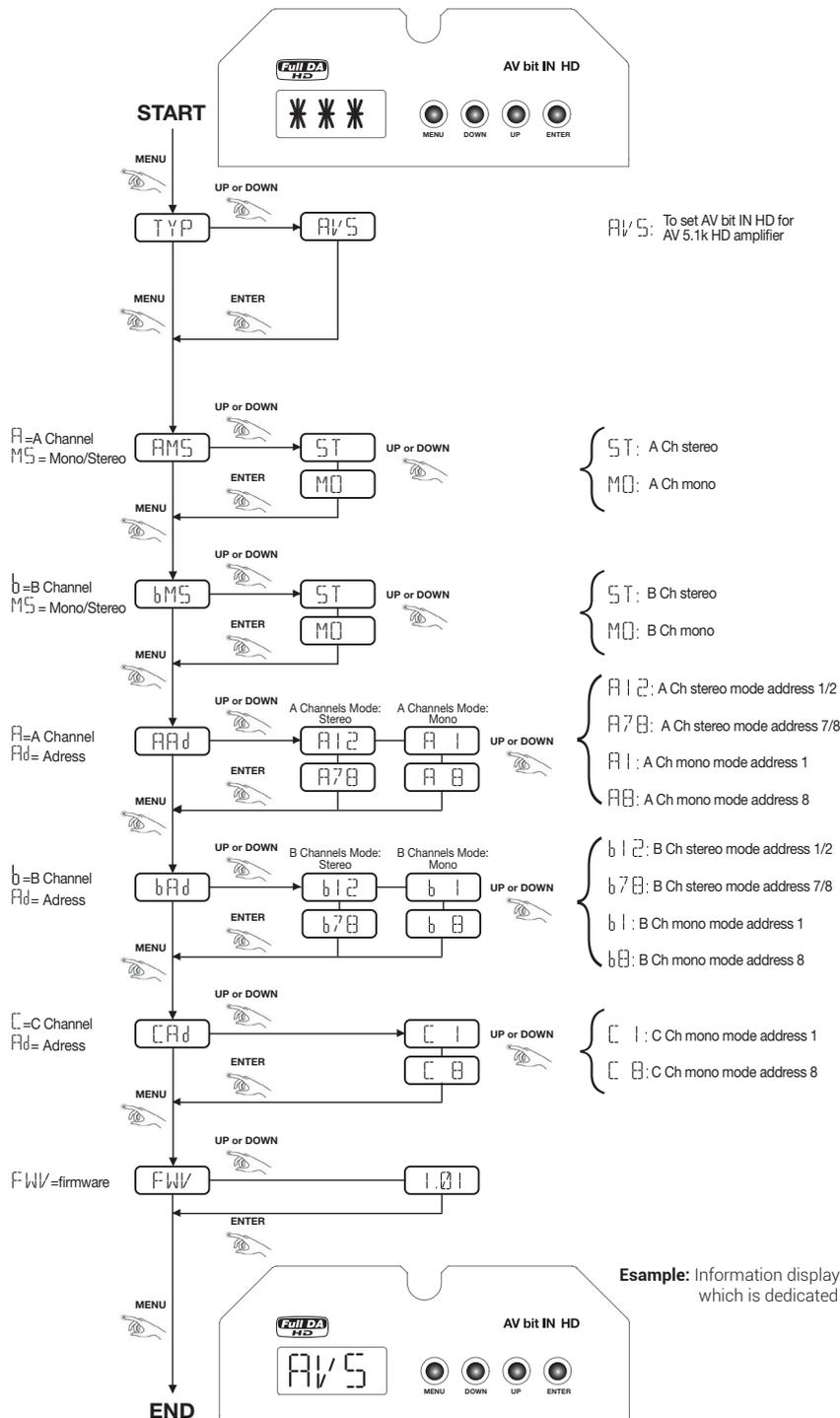
Before starting the configuration of the amplifier or amplifiers equipped with an AV bit IN HD digital input module, set and finalize the processor (bit Ten D / bit One) that will interface with the system.

The processor channels specialized in "Digital output / AC Link - AD Link" will interface with the amplifiers equipped with the AV bit IN HD input module, as shown in the following procedure.

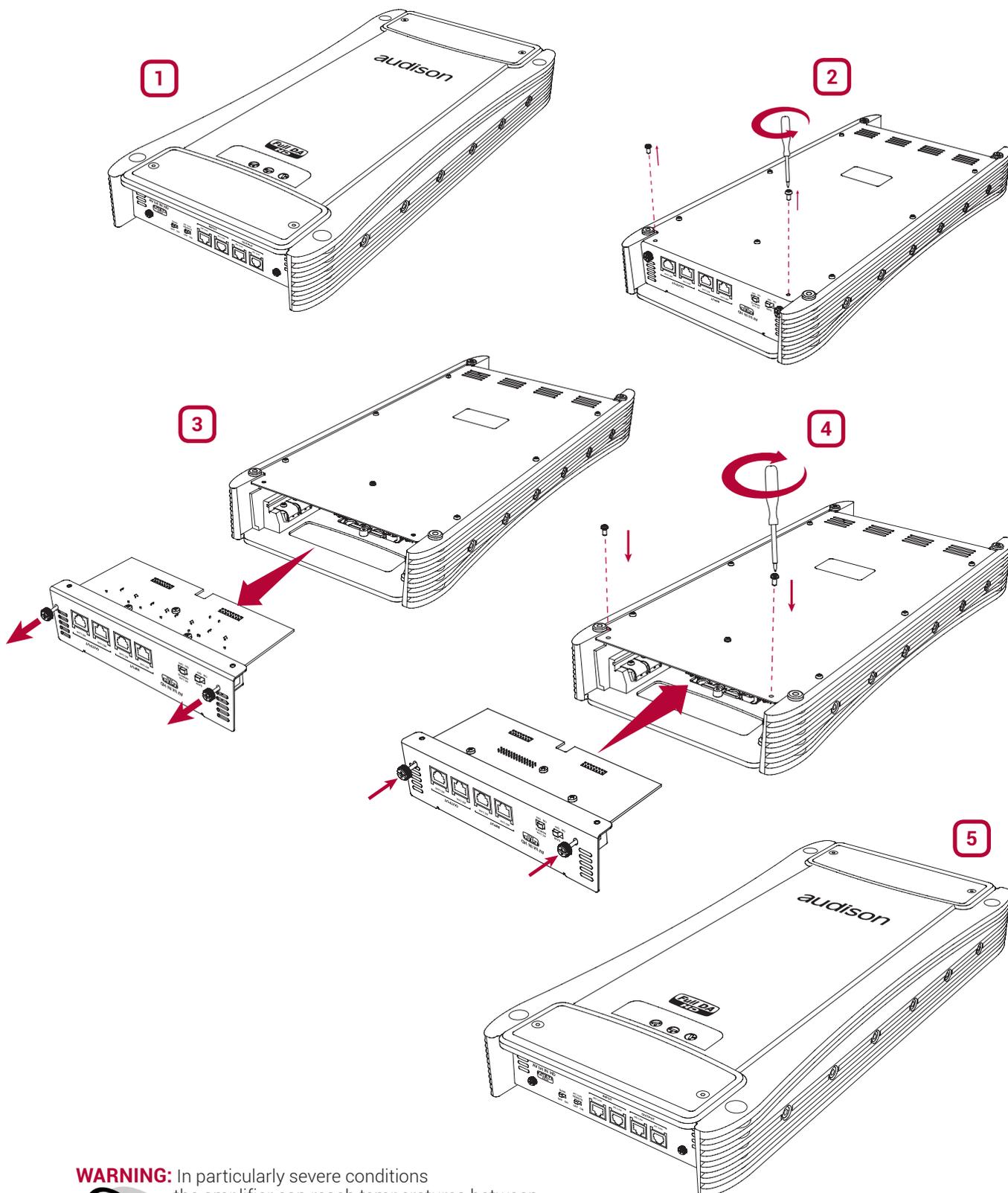
In the "CHANNEL MAP" of the bit Ten D PC software, the specialized channel with digital output are highlighted in green, while for the bit One it should be written down which output channels are assigned the digital format (AD Link - AC Link) during the "I/O Configuration Wizard".

! Set the processor overall volume at a level of -45 dB, which does not endanger the system speakers during installation / adjustment.

Before starting to configure the AV bit IN HD module and after setting the processor (bit Ten D / bit One), turn the sound system off and then on again using the DRC SRC knob.



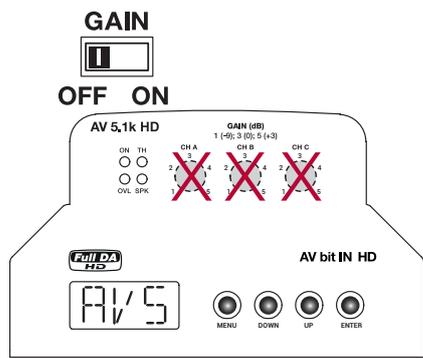
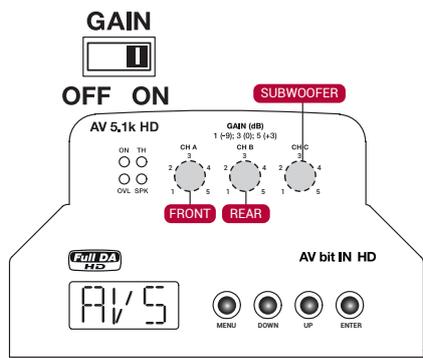
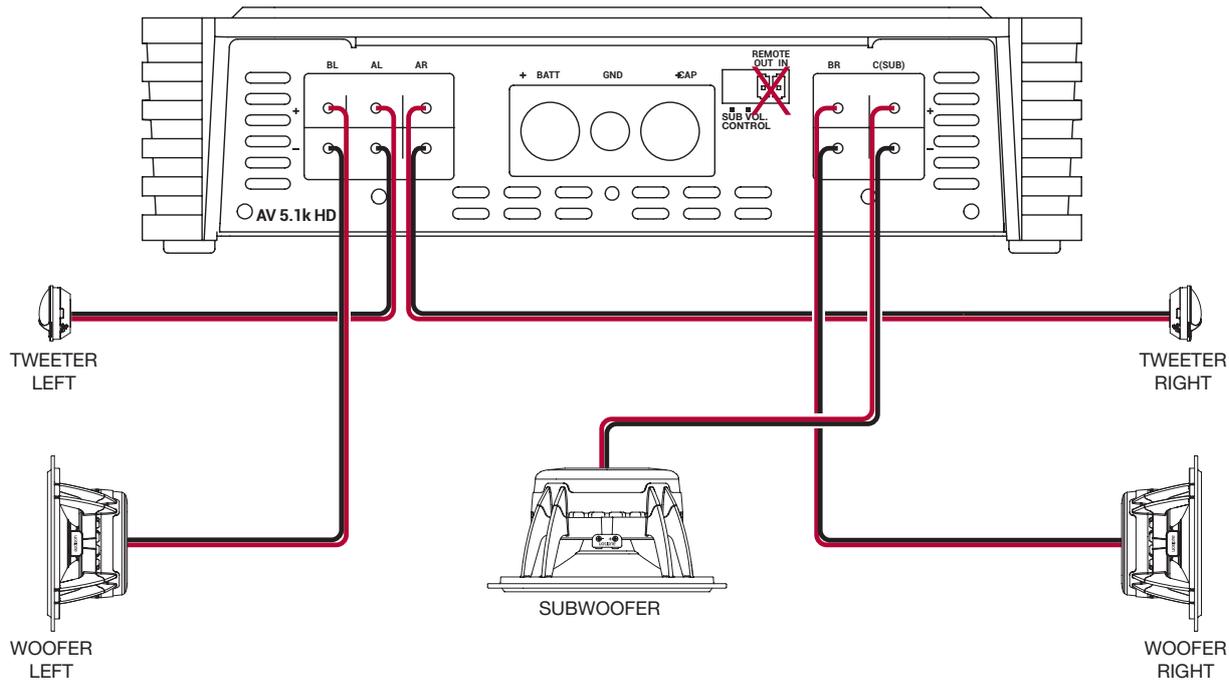
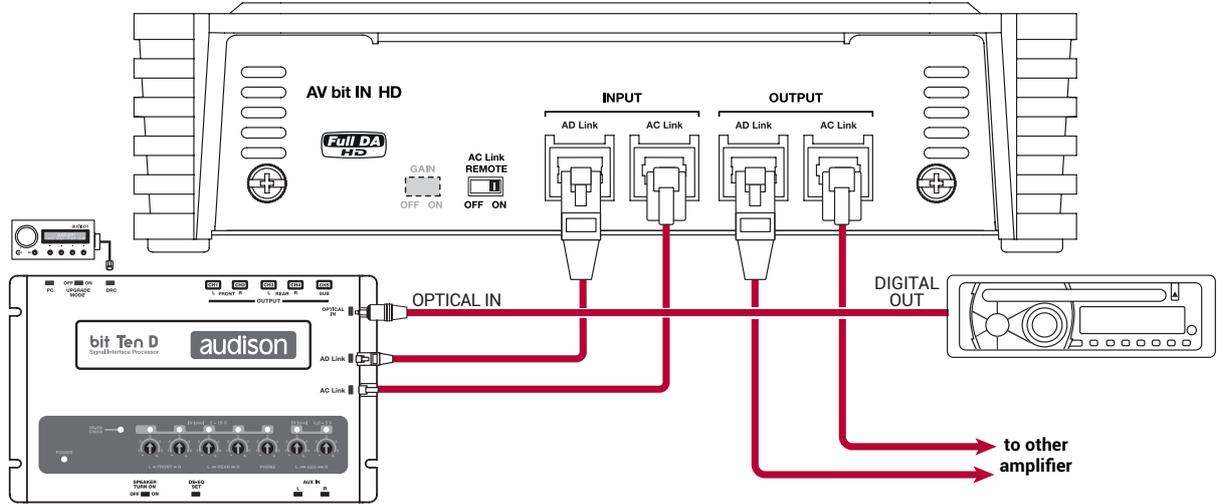
7.5 HOW TO INSERT AV BIT IN



WARNING: In particularly severe conditions the amplifier can reach temperatures between 80 and 90°C (176 ÷ 194°F). Make sure the temperature is not dangerous before touching it.



7.7 FULL DA EXAMPLE: WOOFER + TWEETER + SUB with Audison bit Ten D processor



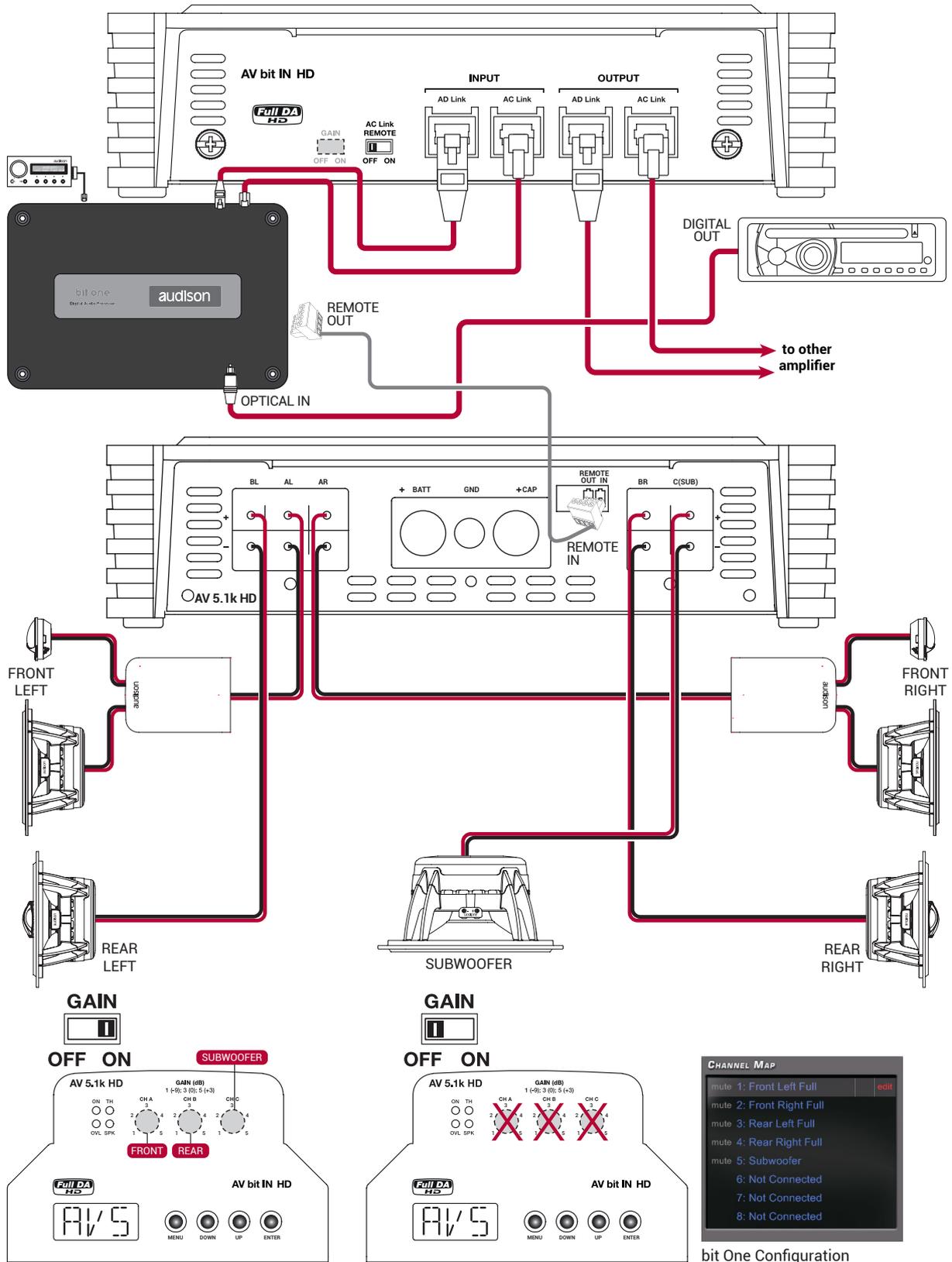
CHANNEL MAP

mute 1:	Front Left Woofer	on
mute 2:	Front Right Woofer	on
mute 3:	Front Left Tweeter	on
mute 4:	Front Right Tweeter	on
mute 5:	Subwoofer	on
mute 6:	Not Connected	
mute 7:	Not Connected	
mute 8:	Not Connected	

bit Ten D Configuration

X N.A.
 Selected function
 Adjustment controls
 System Start-up

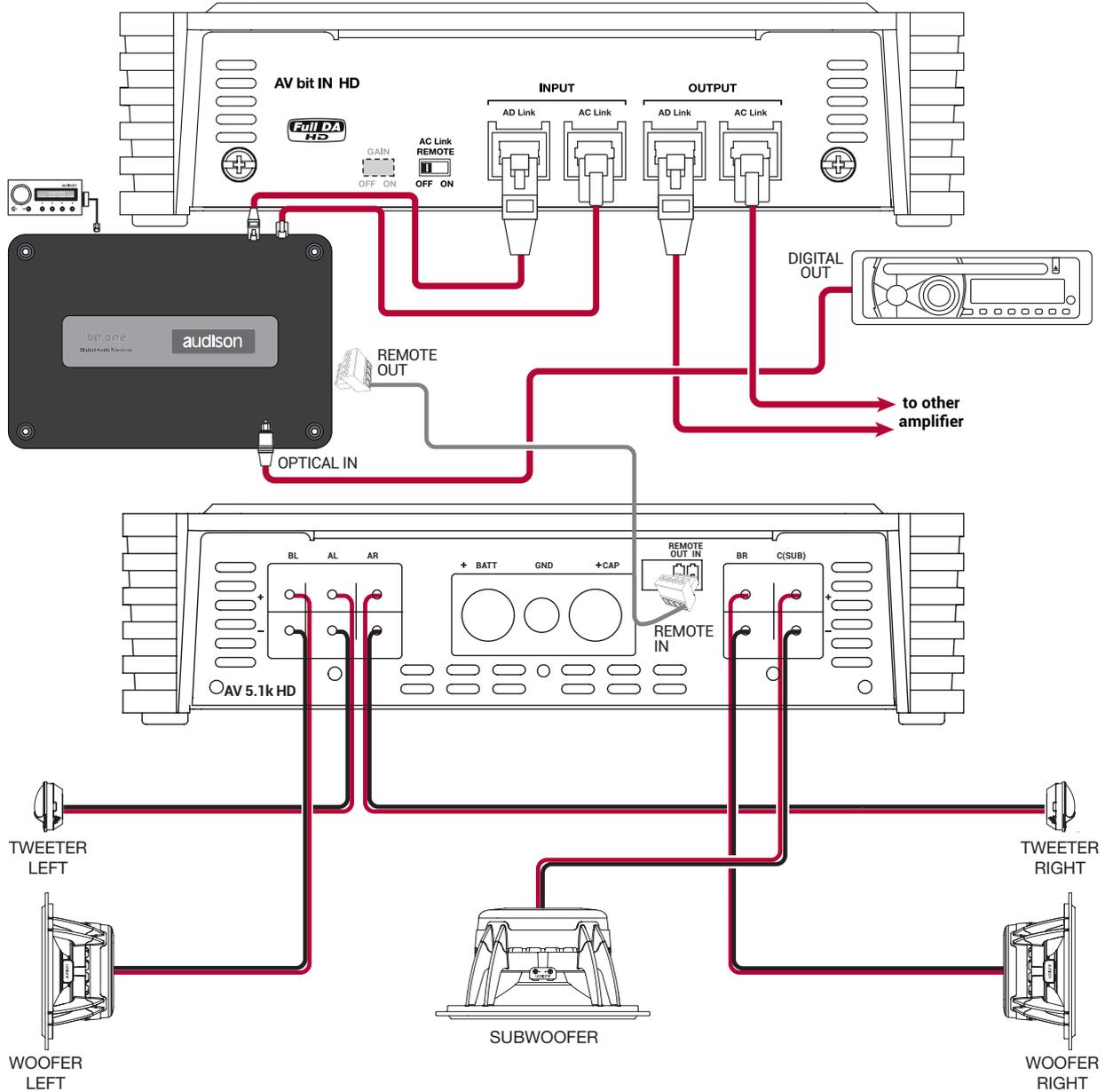
7.8 FULL DA EXAMPLE: FRONT + REAR + SUB with Audison bit One processor



bit One Configuration

X N.A.
 Selected function
 Adjustment controls
 System Start-up

7.9 FULL DA EXAMPLE: WOOFER + TWEETER + SUB with Audison bit One processor



GAIN

OFF ON

SUBWOOFER

AV 5.1k HD

AV bit IN HD

GAIN

OFF ON

AV 5.1k HD

AV bit IN HD

CHANNEL MAP

- mute 1: Front Left Woofer edit
- mute 2: Front Right Woofer
- mute 3: Front Left Tweeter
- mute 4: Front Right Tweeter
- mute 5: Subwoofer
- 6: Not Connected
- 7: Not Connected
- 8: Not Connected

bit One Configuration

X N.A.
 Selected function
 Adjustment controls
 System Start-up

8. TECHNICAL SPECIFICATIONS

POWER SUPPLY	
Power supply voltage:	11 ÷ 15 VDC
Idling current:	3 A
Idling current when off:	0.02 mA
Consumption @ 14.4 VDC (Max Musical Power):	110 A

AMPLIFIER STAGE	
Distortion - THD (1k Hz @ 4Ω) A, B Ch:	0.05 %
Distortion - THD (100 Hz @ 4Ω), C (sub) Ch:	0.3 %
Bandwidth (-3 dB) A, B Ch:	5 ÷ 20k Hz
Bandwidth (-3 dB) C (sub) Ch:	7 ÷ 350 Hz
S/N ratio (A weighted @ 0dB) A, B Ch:	100 dB
S/N ratio (A weighted @ 0dB) C (sub) Ch:	87 dB
Damping factor (1k Hz @ 4Ω) A, B Ch:	100
Damping factor (100 Hz @ 4Ω) C (sub) Ch:	80
Gain (ON/OFF selectable):	-15 / +3 dB
Minimum load impedance A / B / C Ch:	4Ω / 2Ω / 2Ω
NOMINAL POWER (RMS) A + B + C Ch @ 12 VDC, THD 0,3%, 4Ω:	50 W x 2 + 120 W x 2 + 500 W x 1
OUTPUT POWER (RMS) A + B + C Ch @ 14.4 VDC, THD 1%:	<ul style="list-style-type: none"> • 5 Ch: 75 W x 2 (4Ω) + 140 W x 2 (4Ω) + 600 W x 1 (4Ω) • 5 Ch: 75 W x 2 (4Ω) + 140 W x 2 (4Ω) + 1000 W x 1 (2Ω) • 5 Ch: 75 W x 2 (4Ω) + 250 W x 2 (2Ω) + 1000 W x 1 (2Ω)

CEA SPECIFICATIONS	
	Output power @ 4Ω, 1% THD+N, 14.4 V: 75 W x 2 + 140 W x 2 + 600 W x 1
	SN ratio (ref. 1W output): 75 W Channels: 80 dBA 140 W Channels: 80 dBA 600 W Channels: 78 dBA

DIGITAL CONNECTION PANEL	
Digital resolution:	24 bit / 192 kHz
Input:	AD Link / AC Link
Output:	AD Link / AC Link

OTHER FUNCTIONS	
Remote IN:	7 ÷ 15 VDC - 1mA
Remote OUT:	12 VDC - 50mA
Fuse (Strip type):	100 A

SIZE / WEIGHT	
Max size (mm/inch):	220 x 470 x 58 / 8.66" x 18.50" x 2.28"
Weight (kg/lb):	7,2 / 15.87



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