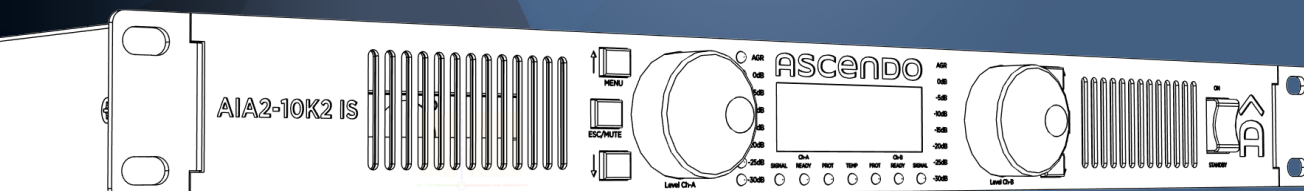


Ascendo

ELEVATE YOUR SOUND

AIA2-10K2 IS



OPERATION MANUAL

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1. DISPOSAL

Correct disposal of this product (Waste Electrical & Electronic Equipment) This symbol means the product must not be discarded as household waste and should be delivered to an appropriate collection facility for recycling.

Proper disposal and recycling help protect natural resources, human health, and the environment. For more information on disposal and recycling of this product, contact your local municipality, disposal service, or the shop where you bought this product.

RoHS

This product is RoHS compliant. This product is in compliance with Directive 2011/65/EU, and its amendments, on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

REACH

REACH (Regulation No 1907/2006) addresses the production and use of chemical substances and their potential impacts on human health and the environment. Article 33(1) of REACH Regulation requires suppliers to inform the recipients if an article contains more than 0.1 % (per weight per article) of any substance(s) on the Substances of Very High Concern (SVHC) Candidate List ('REACH candidate list'). At the time of release of this product, no substances of REACH candidate list are contained in a concentration of more than 0.1% per weight in this product.

THANK YOU FOR CHOOSING ASCENDO IMMERSIVE AUDIO.

For more than 25 Years, ASCENDO has been involved in music reproduction. We are confident that this product you have chosen will provide every note of enjoyment that you expect.

Please take a moment to register your product on our website at www.aia-cinema.com. This enables us to keep you posted on our latest advancements and helps us to better understand our customers and build products that meet their needs and expectations. All features and specifications are subject to change without notice.

WELCOME

Thank you for selecting this Class D power amplifier - AIA2-10K2 IS

The product is developed by a dedicated research and development team and manufactured under controlled production processes. Technical support is provided to assist with correct installation and operation in supported applications.

To ensure safe operation, optimal performance, and correct use of the equipment, read this manual completely before installation or operation.

2. SAFETY WARNINGS

	The exclamation mark within an equilateral triangle alerts the user to the presence of important operating and maintenance (service) instructions in the documentation provided with the product.
	The lightning bolt within an equilateral triangle alerts the user to the presence of uninsulated hazardous voltage within the product enclosure that may be of sufficient magnitude to constitute a risk of electric shock.
	WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK OR FIRE, DO NOT EXPOSE THIS DEVICE TO RAIN OR MOISTURE!

This unit must be grounded!

Install the amplifier in a well-ventilated location where it will not be exposed to high temperature or humidity. Do not install the amplifier in a location that is exposed to direct rays of the sun, or near to hot appliances or radiators.

DO NOT BLOCK THE FRONT OR REAR AIR VENTILLATORS!

DO NOT OPEN! DANGER! HAZARDOUS ENERGY!

Servicing is required when the device is unoperational, or has been damaged in any way.

Please refer all servicing to qualified service personnel!

CAUTION! HIGH MAGNETIC FIELDS!

DO NOT locate sensitive high-gain equipment such as preamplifiers, DSPs, EQ, tape decks etc. directly above or below the unit. Since this digital amplifier has a high power density, it has a strong magnetic field, which can induce hum into unshielded devices that are located nearby. The field is strongest just above and below the unit. If an equipment rack is used, we recommend locating the amplifiers in the bottom of the rack and the sensitive equipments at the top.

SPEAKER OUTPUT SHOCK HAZARD!

These digital power amplifiers are capable of producing hazardous output voltages. To avoid electrical shock, do no touch any exposed speaker wiring while the amplifiers are operating.

If you have any questions, contact your ASCENDO IMMERSIVE AUDIO dealer, or write us an e-mail: info@aia-cinema.com

3. INSTALLATION INFORMATION

Our amplifiers work with very high power levels, therefore the perfect installation is essential for both efficiency and security reasons.

Unproper installation may cause serious injury or fire hazard!

WARNING: NEVER CONNECT THE OUTPUT TO A POWER SUPPLY, GROUND, OR TO EACH OTHER, TO AVOID ELECTRICAL SHOCK OR FIRE.

Due to strong induced magnetic fields, do not locate sensitive, high-gain equipment such as preamplifiers, DSPs, EQ, tape decks etc. directly above or below the unit. The field is strongest just above and below the unit. If an equipment rack is used, we recommend locating the amplifiers in the bottom of the rack and the sensitive equipments at the top.

The output peak currents could exceed 100 Amperes, therefore use only high quality connectors and cables, with proper insulation and conductive cross-section areas.

Using smaller current capacity wiring than recommended may cause the wirings to overheat, or even fire.

Please check the table below, for minimum output cable requirements:

Peak Output Voltage	~225Vp
Peak Output Current @ 2 Ohm	>60A
A min @ 16Ohm l<10m	2.5mm2
A min @ 8Ohm l<10m	4mm2
A min @ 4Ohm l<10m	6mm2
A min @ 4Ohm 10m<l<50m	6mm2 ++

Inputs:

The AIA2-10K2 IS amplifiers have balanced signal inputs for improved sound quality characteristics.

For sound quality reasons, use only symmetrical wiring for the amplifier inputs in case of higher disistances than 1,5m. A balanced line is far more noise immune than unbalanced methods.

However if you want to use the unbalanced method you have to make a connection between pin3 and 1 of XLR input connector and account with double input signal levels to achieve the same output levels.

Caution! The maximum input level of the +/- pins referred to the Ground should never exceed 15V! Higher levels will damage the input stage of the amplifier!

Outputs:

Caution! At high power levels there is a strong magnetic field near the output cables. Be careful when placing the output wires, and keep them as far as possible from sensitive low-signal equipments.

Do not mount the output cables together with wires which can carry sensitive, low-level signals, such as microphones, etc.

Never make loops with the common wires of the output cables, If you have separated wires use twisted pairs, reducing loop size.

The maximum output signal level is set by a configureable limiter.

When the **AGR** (Automatic Gain Reduction) LED lights up, it signs that the limiter is in action. The duration of AGR light is directly related to the signal compression ratio. The longer it is lit, the more compression is applied.

The limiter stage is continuously reducing the voltage amplification while every component of the signal gets compressed into the previously set Voltage margins.

4. REAR PANEL



4. (1) 230V AC Input

The AC Main connection is made via Neutrik POWERCON connector on the rear side of the device. Always check the connector, and the cable before use it! If you find any damage, please consult an electrician for replacement it.

It's very important to connect the ground for safety, never use adapters that disable the ground!

Powercon Pinout:

L	Phase
PE	Ground
N	Neutral

4. (2) Cooling

DO NOT block the front or rear air ventillation openings! When using an equipment rack, mount units directly on top of each other. Close any open spaces in the rack with blank panels!
The side walls of the rack should be a minimum of one inches (2,5 cm) away from the amplifier sides, and the back of the rack should be open. The airflow's direction is front to rear.

After turning on the amplifier, the cooling fans run on 100% speed for at least 5s, then the speed decreases to a lower level. This way you can check if every cooling fan is operational. Once signal and load is applied, the speed of fans are controlled in an intelligent manner, depending on the actual internal temperature and load conditions.

4. (3) Inputs

Channel A,B inputs (XLRs male/female parallell)

Input connectors are made via Neutrik 3-pin XLR male/female connectors. You can use both configuration (balanced and unbalanced line), but you must consider that a long unbalanced line can introduce noise to the audio quality.

Input sensitivity: 1.9Vrms

Input impedance: 10 KOhms + 10 KOhms (+/- 1%)

Pinout of input connectors:

GROUND	PIN 1	Ground/Shielding
POS.	PIN 2	Symmetrical +
NEG.	PIN 3	Symmetrical -

4. REAR PANEL (Cont.)

4. (4) Outputs

Channel A,B outputs (SPEAKON)

Output connectors are made via Neutrik SPEAKON connectors. Please check the 3. Installation Informations table to minimize power and damping factor losses of the speaker cables.

Recommended load impedance range is: 2 Ω – 16 Ω

With most devices, please note that on lower than recommended impedances (< 4 Ω) due to the conductive losses of the output wires, the overall damping factor and the efficiency can decrease. With too low impedance, several protective functions of the amplifier can activate sooner.
Higher loading impedances are always better in the aspects of sound quality and efficiency. Use higher output impedances, if possible.

Warning: There are lethal voltages at the loudspeaker connectors when the amplifier is turned on. To prevent any damages turn the amplifier off before connecting the loudspeakers.

The output connectors pinout:

POS.	1+, 2+ paralell	Positive Output
NEG.	1-, 2- paralell	Negative Output

5. FRONT PANEL



5. (1) POWER: Standby Switch

It switches the device between ON or STANDBY.

WARNING! If the device's mains power is plugged in, even if the device is in STANDBY, the power supply is still working! DO NOT OPEN THE COVERS!

5. (2) TEMP: Overheat Status LED

It doesn't light or flash normally, only when the temperature of the endstage/power supply's heatsink is above 75 °C. In this case the TEMP LED starts flashing, and the maximum output power of the amplifier is decreased by 10%, above 80 °C the flashing becomes faster and the power is further decreased by 33%.

If the power decrease cannot cool back the heatsink under 90 °C the endstage will be muted for safety reasons.

In case of overheat muting the TEMP LED is continuously lit, and the OVERHEATING fault window appears on the display.

When the temperature decreases under 80 °C the endstage automatically turns back on.

In any case of TEMP overheat protection activation, troubleshooting is necessary.

5. (3) PROT: Short Circuit/Overload Protection LED

When the speaker impedance is so low that it becomes dangerous to the correct operation of the device, the problematic output will be muted.

This state is shown by the PROT LED being lit, and SHORT CIRCUIT fault window appears on the display.

The method of this protection can be chosen from the menu (automatic unmute, or remain muted until action).

This can help the technician troubleshoot the reason of the fault.

In case one channel becomes muted due to short circuit/overload protection, the other channel still works.

5. (4) READY A / B: Endstage Status LED

It shows the state of endstage. The LED is controlled by the main microprocessor. After switching on, both channels' status LEDs have to light up for 5s.

5. (5) LCD Display + Power Meter

Here you can see the actual parameters on the screen and you can configure various device functions (volumes, limiters, etc.). The power meter LEDbars show the actual output peak voltages in dB.

5. FRONT PANEL

5. (6) AGR: Automatic Gain Reduction LED

When the input level of the amplifier is higher than the limiter's specified value, the input stage decreases the gain until every component of the input signal will be in the safe output range. With this method, it can be ensured that the output signal won't suffer any distortion, due to input signal fault. This feature is a sort of dynamic compressor / limiter, too.

If you want to use the absolute maximum power of the amplifier, it's optimal when the AGR LED flashes at the peak of the input signal. If the AGR LED is continuously lit, it can be a warning of overload, although the amplifier is still able to reduce the gain up until $\sim 5V_{rms}$ input voltage.

6. FUNCTION SHORTCUT

6. (1) Volume Setting

Use the JOG wheels to adjust the volume settings. You can set the volumes per channels or both channels:

Channel A – left JOG
Channel B – right JOG

If you want to set the values both channels, please activate the Ganging feature (6.2).

You can set the volume range from -95.5 dB to 0 dB (in 0.5 dB steps)

6. (2) Ganging Channels

You can set the channels to Ganging. Press and hold the JOG wheel for 3 seconds, and choose the Ganging mode. (Yes – Ganging active, No – Ganging off).

If the ganging mode is active, you can set the following parameters for both channels:

- Volume
- Input Sensitivity
- Advanced Limiter Voltage

6. (3) Mute

To toggle muting/unmuting of both channels, press and hold the UP button for 3 seconds. Note: If the device lock is activated, this function doesn't work!

6. (4) Information Screens

Our devices have multiple information screens about output voltages, currents, temperatures, and more. You can reach these from the Main View, by pressing the DOWN button. Here you can switch between multiple views by pressing DOWN until you're back to the

Main View. For more details see 7.5. Information Panels

6. FUNCTION SHORTCUT (Cont.)

6. (5) Back to the Main View

Push the ESC button to go back to the Main View.

6. (6) Entering the Menu

Press the UP button to enter the menu.

Note: Locking the device prevents anyone from entering the menu without the DEVICE LOCK code!

6. (7) Navigating the Menusystem

You can move the cursor, and/or modify values with the UP/DOWN buttons and the JOG wheels.
For "Enter/Set" press the JOG wheels.

6. (8) Clear Faults

Fault messages can be dismissed by pressing either JOG wheels (in case of short circuit, DC fault, etc).

7. MAIN DISPLAY

7.1 Informations on the Main View

- Channel A/B actual volume settings
- Actual highest temperature (Power Supply or Endstage heatsink)
- Actual speaker impedance (above 500W)
- Actual power output (above 500W)

7.2 Volume Setting



The Main View always shows the actually set volume from -95.5 dB to 0 dB. To set the volume use either JOG wheels on the front panel. The left JOG is channel A, right side is channel B. In case of ganging the displayed value is for both channels, and modifying the volume with either JOG wheels will change both channel's volume. The set values will be stored in the actual profile which will be kept even after switching off the device, and starting up again.

Volume parameters can be modified remotely too (PC, tablet etc.) with a control software or web browser. These changes will be applied only if the "Remote" function is set to ON.

7.3 Mute with Function Shortcut

Press and hold the MUTE button for 3 seconds to mute both channels. The display willll show the screen below. The volume values still can be changed.



Press and hold it again to disable muting.
Channels can be muted separately, see 8.2. Mute

7.4 Ganging Channels

Press and hold one of the JOG wheels for 3 sec, then choose the appropriate option. (YES – ganging channels ON, NO – ganging channels OFF). When you turn this service on, the parameters of both channels will be set in the same time. (volume level, input sensitivity, limiter, etc).



7. MAIN DISPLAY (Cont.)

7.5 Information Panels

Press the DOWN button to open the first information panel. Pressing DOWN again will scroll to the next information panel. If you want to go back to the main screen, press the ESC button.

The device has multiple information panels to help configuration:

7.5.1 Output Voltages



Values:

PEAK A	-	Ch. A PEAK Voltage
AVG A	-	Ch. A AVERAGE Voltage
PEAK B	-	Ch. B PEAK Voltage
AVG B	-	Ch. B AVERAGE Voltage

7.5.2. Output Current / Workhour



Values:

CURR A	-	Ch. A Peak current
CURR B	-	Ch. B Peak current
Working time:	-	Device total uptime (day : hour : minute : second)
Device lock:	-	Device lock state (on / off)

7.5.3. Power Supply / Temperatures



Values:

ACIN	-	Actual MAINS Voltage
FAN	-	Actual FAN Speed (%)
TEMP A	-	Endstage Heatsink Temperature (°C)
TEMP B	-	Power Supply Heatsink Temperature (°C)

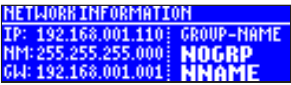
7.5.4. Temperature profiles



In this view you can see the past 2 hours' temperature levels of the Power Supply's, and the Endstage's heatsinks. The graph shows values between 0°C and 90 °C.

7. MAIN DISPLAY (Cont.)

7.5.5. Local Network Parameters



Values:

- IP: - Device IP Address
- NM: - Subnet Mask
- GW: - Gateway Address
- GROUP, DEVICE NAME (Remote Name)

7.6 Fault Windows

7.6.1. Short Circuit Fault window



Press ENTER (JOG wheel) to clear the fault window. You can also dismiss this window via the remote software or internet browser.

7.6.2. Overheat window



You cannot dismiss this message until the temperature becomes lower than 80 °C. Both outputs are muted in this state. Once the temperatures are nominal, the device automatically unmutes, and this message disappears.

7.6.3. DC Fault window



If the device output is detected as DC voltage, the protection disables the endstage. **If you see these window after power on, please refer to qualified service personnel!**

8. MENU SYSTEM

Press the MENU button to enter the menu system.
If the device lock is active, you will need the device unlock code to continue!

8.1 Limiter Settings



With the help of the limiter features, the maximal output peak voltage can be defined, protecting your equipment from unintentional damage.

If you open the Limiter Settings menu, you have two options:

8.1.1. Limiter Wizard



You can set the selected channel's peak voltages in relation to your impedance in Ohm (left JOG) and desired power in Wattage (right JOG). The wizard will automatically calculate the optimal maximum voltages, depending on these two parameters.

8.1.2. Advanced Limiter



If the channels are not ganged, you can set Ch. A maximum voltages with the left JOG and Ch. B with the right JOG. If channels are ganged, either of the jogs will set both channel's voltage limits.

Pressing the jog (ENTER) will save the limiter settings and store it in the current profile for both limiters.

The minimum value is 10 V for the limiter for all devices, the maximum depends on the device type:

Minimum	Maximum
10 V	200 V

8.2 Mute

To Enable or Disable separate channel muting (not both channels via function shortcut) you have to enter the menu, then press either JOGs on MUTE CHA or MUTE CHB options.

The flag at the end of the corresponding channel, shows if MUTE is enabled.

Ch. A Mute OFF



Ch. A Mute ON



8. MENU SYSTEM (Cont.)

8.3 Input Sensitivity Setting

You can modify the input sensitivity to be in accordance with the input signal source. The input sensitivity can be set for each channels separately (unless ganging is active).



The changes are set immediately and saved in the current profile.

8.4 Short Circuit Protection Settings



There are two modes of handling a Short Circuit Protection:

- If AUTOSTART is set to NO - After a short circuit occurs, the affected channel stays in MUTE until the protection pop up window is dismissed.
- If AUTOSTART is set to YES - The affected channel's endstage is automatically UNMUTED once the short circuit event ceases with a 5 second delay, up until the 5th occurrence. After the 5th occurrence, the affected channel stays in MUTE until the protection pop up window is dismissed.

8.5 Control Panel → Adjust Display Contrast

You can set the display's contrast with the JOG wheels in the ADJUST CONTRAST menu. The changes are set immediately and stored in the settings of the actual profile.



8.6 Control Panel → Remote Mode

You can enable or disable the remote control functions here. If disabled (NO) you can only monitor the device remotely (via app, or browser), control features will have no effect.



8. MENU SYSTEM (Cont.)

8.7 Control Panel → Network Settings

You can modify the local network parameters in this menu. Note that the MAC addresses and the IP addresses cannot be the same across multiple devices.

The modifiable local network parameters are:

IP ADDRESS

network settings6-4-1

IP ADDRESS

SUBNET MASK

set ip address

192.168.001.011

SUBNET MASK

network settings6-4-2

IP ADDRESS

SUBNET MASK

GATEWAY

set subnet mask

255.255.255.000

GATEWAY

network settings6-4-3

SUBNET MASK

GATEWAY

MAC ADDRESS

set gateway address

192.168.001.001

MAC ADDRESS

network settings6-4-4

GATEWAY

MAC ADDRESS

EXIT

set mac address

00:08:DC:00:00:02

All changes are set immediately, and stored in the current profile settings. Changes also restart the webserver.

8.8 Profiles

The device has five user profiles. With these profiles you can store 5 independent install parameters. All changed parameters are stored in the currently selected profile!

main menu7-1-1

CONTROL PANEL

PROFILES

DEVICE LOCK

profiles7-1-1

LOAD PROFILE 1

LOAD PROFILE 2

Press either JOGs (ENTER) to load the selected profile.

8.9 Device Lock

DEVICE LOCK

YES

NO

QUIT

DEVICE LOCK

YES

NO

QUIT

UNLOCK DEVICE

7562

Operating the menu and changing any of the parameters can be locked via the Device Lock function. After locking, you must enter the previously set code to unlock the device. Note that you will have to go back to the device lock menu point and disable the locking feature, otherwise the device remains locked!

If the user-set code has been forgotten or is unavailable, the device can be unlocked using the default unlock code: 7562.

15 SPECIFICATIONS

Type	AIA2-10K2 IS			
Power Requirements	160 V – 270 VAC, 50-60 Hz			
Average Power Consumption	10 kW			
Soft Starting	Yes, with programmable time delay start-up sequence			
Power Supply	High Frequency Single-Stage Resonant with High Power-Factor (PFC)			
Mains Connection	Neutrik Powercon			
Working Temperature Range	0 – 40°C			
Storage Temperature Range	-25 - 60°C			
Output Power	230V @ 16 Ω	230V @ 8 Ω	230V @ 4 Ω	230V @ 2 Ω
	2 x 1300 W	2 x 2600 W	2 x 5000 W	2 x 3600 W
Frequency Response	5 Hz - 20 kHz (+/- 3 dB, 8 Ohms)			
Damping Factor	>700			
Slew rate	62 V/μs			
End-Stages	High Frequency Semi-Soft Switched PWM in Balanced Configuration			
Output Connections	Four Pole Amphenol SPEAKON (1+2+ in parallel, 1-2- in paralel)			
Signal-To-Noise Ratio	105 dB			
Nominal input sensitivity for maximum output level (balanced)	1.9Vrms			
Input Impedance (Referred to ground)	10 KOhms + 10 KOhms (+/- 1%)			
CMRR	>100dB			
Input Connectors	Neutrik XLR			
Built in Limiter	Advanced Limiter (1V / Step), Adjustable “Limiter Wizard” (Impedance/Wattage)			
Advanced Limiter Settings	10 - 200V			
Indicators	LEDbar, status LEDs (AGR, Short, Temp, Protect, Ready), Graphics Display			
Display	JOG wheels, Buttons			
Volume Control	-95.5 dB – 0 dB Set by Control JOG Wheels (0.5 dB / Step)			
Input Sensitivity	-95.5 dB – 0 dB Set by Control JOG Wheels (0.5 dB / Step)			
User Profiles	5 User Profiles			
Protections	Short Circuit, Overload, Low impedance, Thermal, DC fault			
Cooling	Active Air Cooling with Regulated DC Fans			
Direction of Airflow	Front to Rear			
Remote control	10/100 Mbps Ethernet			



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