Ashly CA502

Ashly CA502 2-Channel 500W Class D Amplifier

User Manual

1. Introduction

The Ashly CA502 is a 2-channel Class D power amplifier designed for professional audio installations. It delivers 500W per channel into 2 or 4 Ohms, and 250W into 8 Ohms. When bridged, it can provide 1000W into 4 Ohms or drive 70V/100V loads. This amplifier incorporates Ashly's proprietary D-MAX technology, featuring ultra-fast Silicone-Carbide switches, a high-speed power supply, and Dynamic Power Factor Correction for exceptional efficiency and stable performance. The SailFlow directed cooling system ensures optimal thermal management, allowing the amplifier to operate reliably even under demanding conditions. Key features include front-panel input level controls, LED indicators for amplifier status, balanced Euroblock and XLR combo input connectors, VCA control ports, and switchable High-Pass Filters (HPF) and Limiters on each channel. A standby port and front panel lockout provide additional flexibility and security.

Figure 1: Front view of the Ashly CA502 amplifier, displaying its controls and indicators.

Product Overview Video

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Video 1: An overview of the Ashly CA Series Power Amplifiers, highlighting their design and features.

2. Safety Information

Please read and understand all safety instructions before operating this device. Retain this manual for future reference.

- **Power Source:** Connect the amplifier only to a power supply of the type specified in this manual and on the unit.
- **Grounding:** Ensure the amplifier is properly grounded to prevent electric shock.
- **Ventilation:** Do not block any ventilation openings. Install in accordance with the manufacturer's instructions. Maintain adequate airflow around the unit.
- **Water and Moisture:** Do not expose this apparatus to rain or moisture. Do not use this apparatus near water.
- **Heat:** Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- **Servicing:** Do not attempt to service this product yourself. Refer all servicing to qualified service personnel.
- **Cables:** Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

3. Setup

3.1 Physical Installation

The Ashly CA502 is designed for rack mounting. It occupies 2U of rack space. Ensure sufficient space for ventilation, especially at the front and rear of the unit.

- Mount the amplifier securely in a standard 19-inch equipment rack using appropriate rack screws.
- Allow at least 1U of empty space above and below the amplifier for optimal airflow, especially in enclosed racks.

3.2 Rear Panel Connections

The rear panel provides all necessary input, output, and control connections. Refer to Figure 2 for a visual guide.

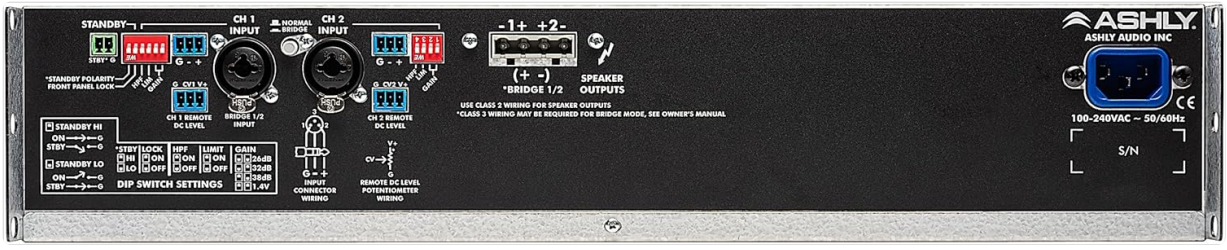


Figure 2: Rear panel of the Ashly CA502 amplifier, detailing connection points.

- **Input Connectors:** Use the balanced Euroblock or XLR Combo input connectors for audio signal input.
- **Speaker Outputs:** Connect your speakers to the Euroblock speaker output terminals. Ensure correct polarity and impedance matching.
- **VCA Control Ports:** For remote volume control, connect a standard volume control device (e.g., Ashly WR-1.1) to the VCA control ports.
- **Standby Port:** Connect external control systems for amplifier standby functionality.
- **DIP Switch Settings:** Configure per-channel settings such as Limiter and High-Pass Filter using the DIP switches. Refer to the 'Operation' section for detailed settings.

3.3 Power Connection

Connect the supplied AC power cord to the amplifier's power inlet and then to a grounded AC power outlet. The amplifier operates on 100-240VAC, 50/60Hz.

4. Operation

4.1 Front Panel Controls and Indicators

- **Input Level Controls:** Adjust the input sensitivity for each channel.
- **LED Indicators:**
    - **Clip/Mute (Red):** Illuminates when the output signal is clipping or the channel is muted.
    - **Signal (Green):** Indicates the presence of an input signal.
    - **Protect (Red):** Illuminates if the amplifier enters protection mode due to an issue.
    - **Current (Yellow):** Indicates high current draw.
    - **Temp (Yellow):** Indicates high internal temperature.
    - **Bridge (Green):** Illuminates when the amplifier is operating in bridged mode.

4.2 Rear Panel DIP Switch Settings

The DIP switches on the rear panel allow for per-channel configuration of various functions:

- **Input Gain:** Adjusts the input gain for the channel.
- **Output Clip Limiter:** Engages or disengages the output clip limiter.
- **High-Pass Filter (HPF):** Activates an 80Hz high-pass filter to protect smaller speakers.
- **Standby Polarity:** Configures the standby control input polarity.
- **Front Panel Lock:** Enables or disables the front panel controls.

4.3 Bridged Mode and 70V/100V Operation

The CA502 can be configured for bridged operation to combine the power of both channels into a single, higher-power output. This is also used for driving 70V or 100V constant voltage speaker systems.

- To engage bridged mode, refer to the DIP switch settings on the rear panel and the wiring diagram provided on the unit.
- For 70V/100V applications, ensure the amplifier is correctly configured and wired for constant voltage output. The CA502 model requires bridging to achieve 70V output.

5. Maintenance

Regular maintenance ensures the longevity and optimal performance of your Ashly CA502 amplifier.

5.1 Cleaning

- Disconnect the amplifier from the power source before cleaning.
- Use a soft, dry cloth to wipe down the exterior of the unit.
- Periodically use a vacuum cleaner with a brush attachment to remove dust from the ventilation grilles.
- Do not use liquid cleaners or solvents, as they may damage the finish or internal components.

5.2 Cooling System

The CA Series amplifiers feature a SailFlow directed cooling system designed for efficient heat dissipation. This system helps the amplifier run cool and quietly.

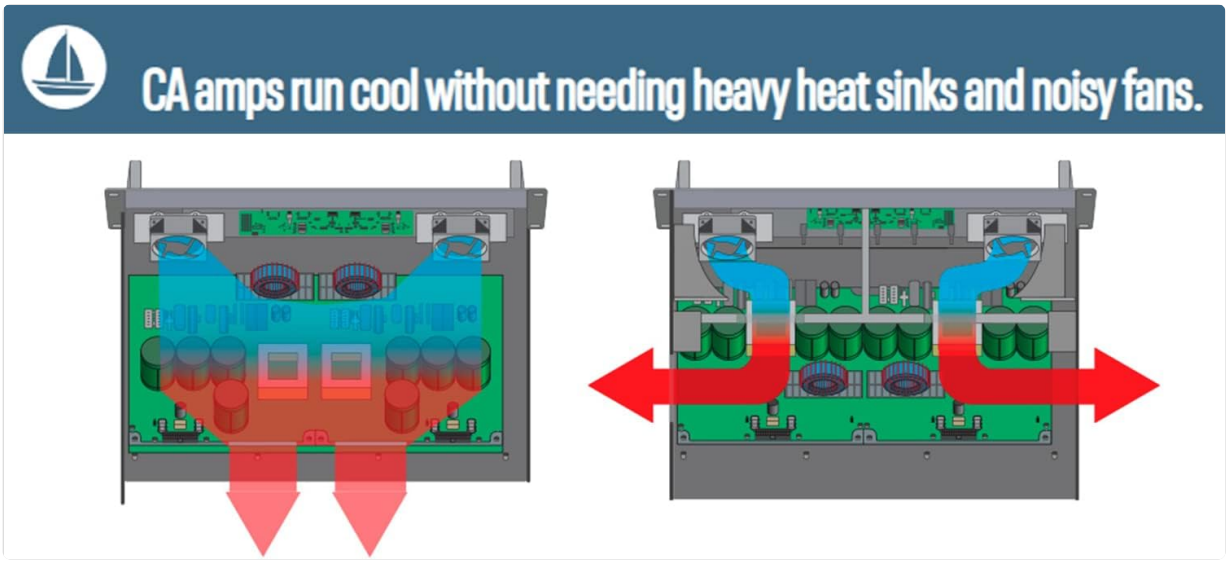


Figure 3: SailFlow directed cooling system diagram, showing efficient airflow.

- Ensure that the amplifier's ventilation openings are never obstructed.
- Maintain proper rack ventilation to prevent heat buildup, which can affect performance and lifespan.

6. Troubleshooting

If you encounter issues with your Ashly CA502 amplifier, consult the following basic troubleshooting steps:

- **No Power:**
  - Check that the power cord is securely connected to both the amplifier and a live AC outlet.
  - Verify the AC outlet is functioning by plugging in another device.
- **No Audio Output:**
  - Ensure all input and output cables are correctly connected and secure.
  - Check the input level controls on the front panel are not set to minimum.
  - Verify that the input source is active and sending a signal.
  - Check the speaker connections for correct polarity and secure contact.
  - Ensure the amplifier is not in standby mode or muted.
- **Distorted Audio / Clipping:**
  - Reduce the input level to prevent the Clip/Mute LED from illuminating.
  - Ensure speakers are correctly matched to the amplifier's impedance.
  - Check for damaged speaker cables or faulty speakers.
- **Overheating (Temp LED on):**
  - Ensure adequate ventilation around the amplifier. Clear any obstructions from the air vents.
  - Reduce the output level or the duration of high-power operation.
  - Verify speaker impedance is within the amplifier's specified range.

If the issue persists after performing these checks, contact Ashly technical support or a qualified service technician.

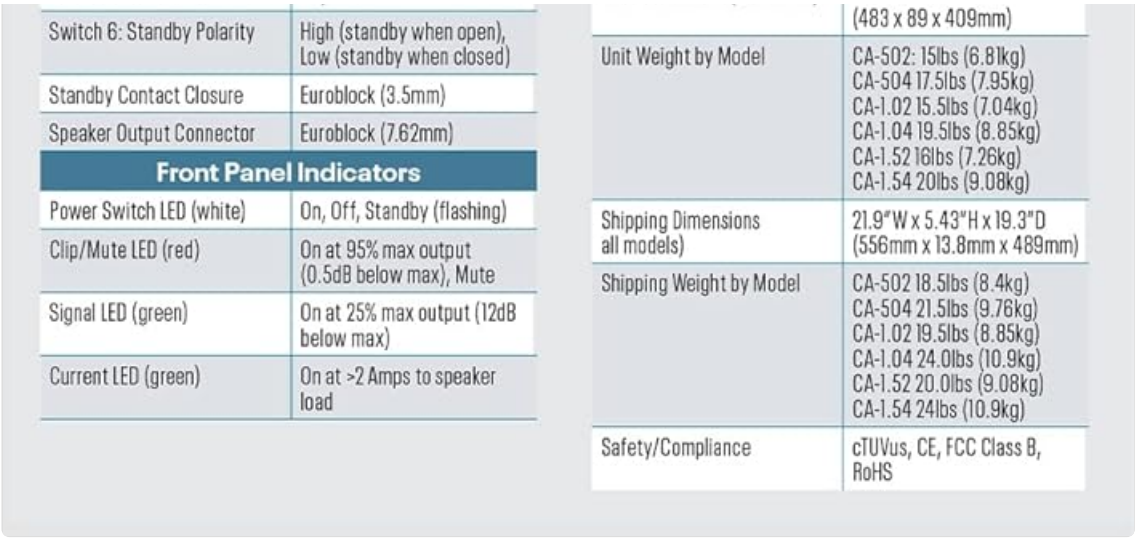
7. Specifications

Detailed technical specifications for the Ashly CA502 amplifier:

General Power Amplifier Specifications (0dBu = 0.775V rms)						
Amplifier Model	CA1.54	CA1.52	CA1.04	CA1.02	CA504	CA502
Maximum Output Power - in Watts *CEA-2006/490A, 20ms 1kHz 1%THD+N, 480ms 1kHz -20dB, 120VAC, all channels driven at rated load*						
Low Z output, per channel						
2 Ohm	1500	1500	1000	1000	500	500
4 Ohm	1500	1500	1000	1000	500	500
8 Ohm	750	750	500	500	250	250
Low Z output, per bridged channel pair*						
4 Ohm	3000*	3000*	2000*	2000*	1000*	1000*
8 Ohm	1500*	1500*	1000*	1000*	500	500
70V/100V* output						
70V	1500 (direct)	1500 (direct)	1000 (direct)	1000 (direct)	1000* (bridged)	1000* (bridged)
100V	3000* (bridged)	3000* (bridged)	2000* (bridged)	2000* (bridged)	1000* (bridged)	1000* (bridged)
*May require Class 3 speaker wiring, all others use Class 2 wiring. See section 2.3						
Total Power Draw - in Watts, all channels driven, 1/8 power sinewave						
Standby	22	13	19	10	17	8
Idle (no signal)	100	31	70	40	34	17
1/8 max power	975	485	675	335	345	172
Total Current Draw - in Amps, all channels driven, 1/8 power sinewave, 120VAC (divide by 2 for 240VAC)						
Standby mode	0.39	0.24	0.37	0.21	0.35	0.2
Idle (no signal)	0.68	0.36	0.64	0.34	0.5	0.27
1/8 max power	8.9	4.2	6	3	3	1.5
Total Thermal Dissipation - in BTU/hour with typical input, all channels driven, 120VAC						
Standby mode	76	44	65	32	57	28
Idle (no signal)	209	105	184	96	115	57
1/8 max power, 4 Ohm	648	314	474	229	266	120
1/8 max power, 2 Ohm	754	355	576	269	304	148
Input Sensitivity - in Volts and dBu, per back panel DIP Switch gain settings						
@26dB gain	2.0V (+8.2dBu)	2.0V (+8.2dBu)	2.7V (+11dBu)	2.7V (+11dBu)	3.9V (+14dBu)	3.9V (+14dBu)
@32dB gain	1.0V (+2.2dBu)	1.0V (+2.2dBu)	1.4V (+5.1dBu)	1.4V (+5.1dBu)	1.9V (+7.8dBu)	1.9V (+7.8dBu)
@38dB gain	0.5V (+3.8dBu)	0.5V (+3.8dBu)	0.68V (-1.1dBu)	0.68V (-1.1dBu)	0.97V (+2dBu)	0.97V (+2dBu)
@1.4V gain	1.4V (+5.1dBu)	1.4V (+5.1dBu)	1.4V (+5.1dBu)	1.4V (+5.1dBu)	1.4V (+5.1dBu)	1.4V (+5.1dBu)

Electronic	
Distortion (SMPTE, typical)	<0.5%
Distortion (THD-N, typical, 8 Ohm, 10dB below rated power, 20Hz-20kHz	<0.5%
Signal to Noise, 26dB input sensitivity, 20Hz-20kHz, unweighted	>98dB (50x models) >101dB (1.0x models) >103dB (1.5x models)
Frequency Response	20Hz-20kHz, ±0.05dB
Channel Separation (dB from full output, 1kHz)	-75dB
Damping Factor (8 Ohm load, <1kHz)	>250
Balanced Input Connector (per channel)	Euroblock (3.5mm), ¼" TRS and XLR Combo jack
Input Impedance	10k Ohm
Maximum Input Level	+21dBu
Bridge Mode Switch (per channel pair)	In for bridged mode, Out for stereo
Remote DC Level Control (G, CV, V+ per channel)	Euroblock (3.5mm), V+ is fully on, G is fully attenuated
DIP Switch settings (per channel)	
Switches 1-2: Input Gain	26dB, 32dB, 38dB, 1.4V
Switch 3: Output Clip Limiter	On, Off
Switch 4: Input High Pass Filter	80Hz 2nd order HPF, On, Off
DIP Switch settings (global)	
Switch 5: Front Panel Disable	On, Off

Front Panel Indicators (cont'd)	
Temp LED (yellow)	On when thermal counter-measures are being applied
Bridge LED (green)	Per Channel Pair - On, Off
Protect LED (red) see troubleshooting section for protect LED error codes	On for fault condition counter-measures or shut-down, Off
Disable LED (yellow)	On when front panel controls are disabled, Off
Controls	
Attenuators	Per channel: front panel, Fully off = Mute
Remote Control Options	WR-1, WR-1.1 DC level control
Protection and Cooling	
Amplifier Protection	In-rush current, over-temperature, output DC, output over-power, AC mains voltage, mains fuses
Cooling	Continuously variable temperature controlled fan(s)
Physical	
Power Cable Connector	20A IEC
Operating Voltage Range (50-60Hz, 85VAC or 170VAC min startup)	70-135VAC @110-120VAC, 140-270VAC @220-240VAC
Environmental	32°F-120°F, (0°C-49°C) non-condensing
Unit Dimensions (all models)	19"W x 3.5"H x 16.1"D



Switch 6: Standby Polarity	High (standby when open), Low (standby when closed)
Standby Contact Closure	Euroblock (3.5mm)
Speaker Output Connector	Euroblock (7.62mm)
Front Panel Indicators	
Power Switch LED (white)	On, Off, Standby (flashing)
Clip/Mute LED (red)	On at 95% max output (0.5dB below max), Mute
Signal LED (green)	On at 25% max output (12dB below max)
Current LED (green)	On at >2 Amps to speaker load

	(483 x 89 x 409mm)
Unit Weight by Model	CA-502: 15lbs (6.81kg) CA-504 17.5lbs (7.95kg) CA-1.02 15.5lbs (7.04kg) CA-1.04 19.5lbs (8.85kg) CA-1.52 16lbs (7.26kg) CA-1.54 20lbs (9.08kg)
Shipping Dimensions all models)	21.9"W x 5.43"H x 19.3"D (556mm x 13.8mm x 489mm)
Shipping Weight by Model	CA-502 18.5lbs (8.4kg) CA-504 21.5lbs (9.76kg) CA-1.02 19.5lbs (8.85kg) CA-1.04 24.0lbs (10.9kg) CA-1.52 20.0lbs (9.08kg) CA-1.54 24lbs (10.9kg)
Safety/Compliance	cTUVus, CE, FCC Class B, RoHS

Figure 4: General Power Amplifier Specifications for the CA Series.

Ashly CA502 Key Specifications

Feature	Specification
Model	CA502
Number of Channels	2
Output Power (per channel)	500W @ 2/4 Ohms, 250W @ 8 Ohms
Bridged Output Power	1000W @ 4 Ohms, 70V/100V (bridged)
Amplifier Class	Class D (D-MAX Technology)
Voltage	100-240 Volts AC, 50/60Hz
Item Dimensions (L x W x H)	16 x 19 x 3.5 inches
Mounting Type	Rack (2U)
Item Weight	15 Pounds
Material Type	Metal
Specification Met	FCC

8. Warranty & Support

8.1 Warranty Information

The Ashly CA502 amplifier comes with a**5 Years Parts & Labor Warranty**. This warranty covers defects in materials and workmanship under normal use. Please retain your proof of purchase for warranty claims.

8.2 Technical Support

For technical assistance, troubleshooting beyond the scope of this manual, or warranty service, please contact Ashly Audio customer support. Visit the official Ashly website for contact information and additional resources.