



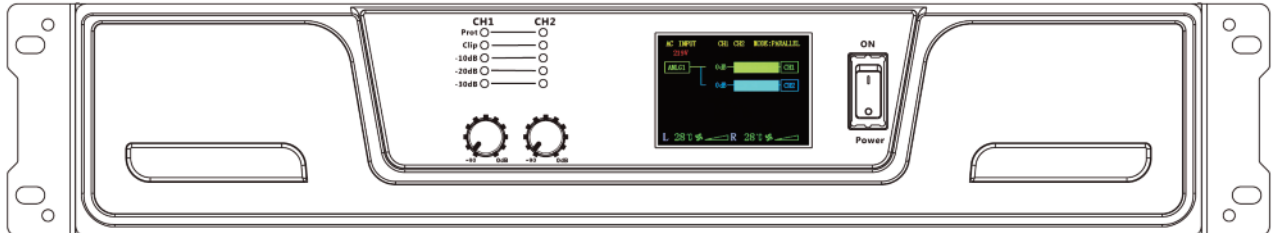
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# ACP1600/2400/3200 User Manual

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## 2 Channel Power Amplifier



## Important Precautions & Instructions

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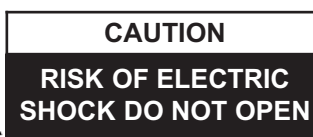
### Professional power amplifier ACP-series

Cobra Acoustic Professional Power Amplifiers are reliable, cost effective and designed for continuous, trouble-free operation under rigorous use. Cobra Acoustic's unique degree of commitment to research, quality control and testing, results in continuous improvements to the product. The amplifier is fully protected against short circuit, over temperature and DC output. If you need special assistance beyond the scope of this manual, please contact our technical support department.

### Warning:

Read this manual carefully before installing, powering, operating, cleaning or servicing this product!

Watch for these symbols:



CAUTION: To reduce the risk of electric shock, do not open the top cover. No user serviceable parts inside. Refer servicing to qualified personnel.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of un-insulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### Warning

To prevent fire or electric shock, do not expose this device to rain or moisture.

### Before Use

- Before you start using this device, please check if there is any transportation damage. Should there be any, do not use the device and consult your dealer first.
- **Important:** This device left our factory in perfect condition and well packaged. It is absolutely necessary for the user to strictly follow the safety instructions and warnings in this user manual. Any damage caused by mishandling is not subject to warranty. The dealer will not accept responsibility for any resulting defects or problems caused by disregarding this user manual.
- Keep this booklet in a safe place for future consultation. If you sell the device, be sure to add this user manual.
- To protect the environment, please try to recycle the packing material as much as possible.
- Check the contents:  
Check the carton contains: User Manual, ACP Amplifier and Power Cable.

# Important Precautions & Instructions

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## Safety Instructions

- **Caution:** To prevent the risk of electric shock, do not remove the top cover. No user-serviceable parts inside. Refer servicing to qualified service personnel only.
- To avoid condensation forming inside, allow the device to adapt to the surrounding temperatures when bringing it into a warm room after transport. Condensation sometimes prevents the device from working at full performance or may even cause damage.
- This device is for indoor use only.
- Do not place metal objects or spill liquid inside the device. If a foreign object enters the device, immediately disconnect the mains power.
- No naked flame sources, such as lighted candles, should be placed on the device.
- Avoid use in industrial environments.
- Keep the device away from children.
- Inexperienced persons should not operate this device.
- Maximum safe ambient temperature is 40 degrees centigrade. Do not use this device at higher ambient temperatures.
- Always unplug the device when it is not used for a long time or before you start servicing.
- Any electrical installation should be carried out by qualified personnel only, according to the regulations for electrical and mechanical safety in your country.
- Check that the available voltage is not higher than the one stated on the rear panel of the device.
- The power cord should always be in perfect condition. Switch the device immediately off when the power cord is squashed or damaged.
- Never let the power cord come into contact with other cables.
- Never modify the device in any way.
- When the power switch is in OFF position, this is not completely disconnected from the mains.
- This device must be earthed in order to comply with safety regulations.
- Never repair a fuse or bypass the fuse holder. Always replace a damaged fuse with a fuse of the same type and electrical specifications.
- In the event of serious operating problems, stop using the device and contact your dealer immediately.
- Please use the original packing when the device is to be sent for service.
- Due to safety reasons it is prohibited to make unauthorized modifications to the device.

## Installation

- **Keep this device away from the following locations:**
  - Locations exposed to oil splashes or steam, such as near cooking stoves, humidifiers etc.
  - Unstable surfaces, such as a wobbly table or slope.
  - Locations exposed to excessive heat, such as, near hot spot lamps, heaters or in direct sunlight.
  - Locations subject to excessive humidity or dust accumulation.
- Do not place the power cord close to a heater. It may melt, causing fire and electrical shock.
- Hold the power cord plug when disconnecting it from an AC outlet. Never pull the cord. A damaged power cord is a potential fire and electrical shock hazard.
- Do not touch the power plug with wet hands. Doing so is a potential fire and electrical shock hazard.
- This device has ventilation holes at the front and rear to prevent the internal temperature rising too high. Do not block them. Blocked ventilation holes are a fire hazard.
- **In particular, do not:**
  - Place the device on its side or upside down,
  - Place the device in any poorly ventilated location such as a bookcase or closet
  - Cover the device with a table cloth or place it on a carpet or bed.
- Allow enough free space around the device for normal ventilation. This should be: 5cm at the sides, 10cm behind, and 10cm above. If the airflow is not adequate, the device will heat up inside and may cause a fire.
- If several devices are to be mounted in a rack, ensure that there is adequate ventilation. Extra spacing is recommended between amplifiers and extra ventilation fans may be required in the rack.
- Take care to minimise shock and vibrations during transit.
- To relocate the device, turn the power switch off, remove the power plug from the AC outlet, and remove all connecting cables. Damaged cables may cause fire or electrical shock. Always use good quality cable for connecting the amplifier to other equipment. Use pre-made cables or employ a qualified engineer if you are unsure about making them yourself.

## Important Precautions & Instructions

### Operation

- Use only speaker cables when connecting speakers to amplifier outputs. Using other types of cables is a fire hazard.
- Turn off all musical instruments, audio equipment, and speakers when connecting to this unit. Use the correct connecting cables and connect as specified.
- Always lower the volume control to minimum before turning on the power to this device. A sudden blast of sound may damage your hearing.
- Do not use this amplifier for any purpose other than driving loudspeakers.
- If you know you will not use this device for a long period of time, such as when going on vacation, remove the power plug from the AC outlet. Leaving it connected is a potential fire hazard.

### Cleaning the appliance:

- Clean by wiping with a damp cloth. Avoid getting water inside the device. Do not use volatile liquids such as benzene or thinner which will damage the device.
- Clean the ventilation holes regularly with a vacuum cleaner. This increases the cooling capacity of the amplifier fans and helps prevent temperature overheat.
- The amplifier must be kept clean at all times. Disconnect from the mains power supply before performing any cleaning operation. Wipe the exterior of the amplifier with a damp cloth. Cleaning of internal parts such as filters and grilles should be undertaken by a qualified service engineer.

### Specification

Model	ACP1600	ACP2400	ACP3200
Power Output 8 Ohm	400 Watt x 2	600 Watt x 2	800 Watt x 2
Power Output 4 Ohm	600 Watt x 2	900 Watt x 2	1200 Watt x 2
Power Output Bridged 8 Ohm	1200 Watt x 1	1800 Watt x 2	2400 Watt x 2
Frequency Response (+/-0.3dB)	20Hz - 20000Hz	20Hz - 20000Hz	20Hz - 20000Hz
Input Sensitivity	0.775V/1V/1.4V		
Input Impedance	20k Ohm Balanced/10k Ohm Unbalanced		
S/R Ratio	>80dB		
Damping Factor	>200		
Cooling	Fan Cooling		
Inputs	Balanced XLR		
Outputs	Speakon/Terminal		
Power supply	AC230V 50Hz		
Dimensions	500 x 485 x 88mm 2U		
Weight	20kg	22kg	24kg

### Compliance

This unit is radio interference suppressed. This appliance meets the requirements of the current European and national guidelines. Conformity has been established and the relevant statements and documents have been deposited by the manufacturer.

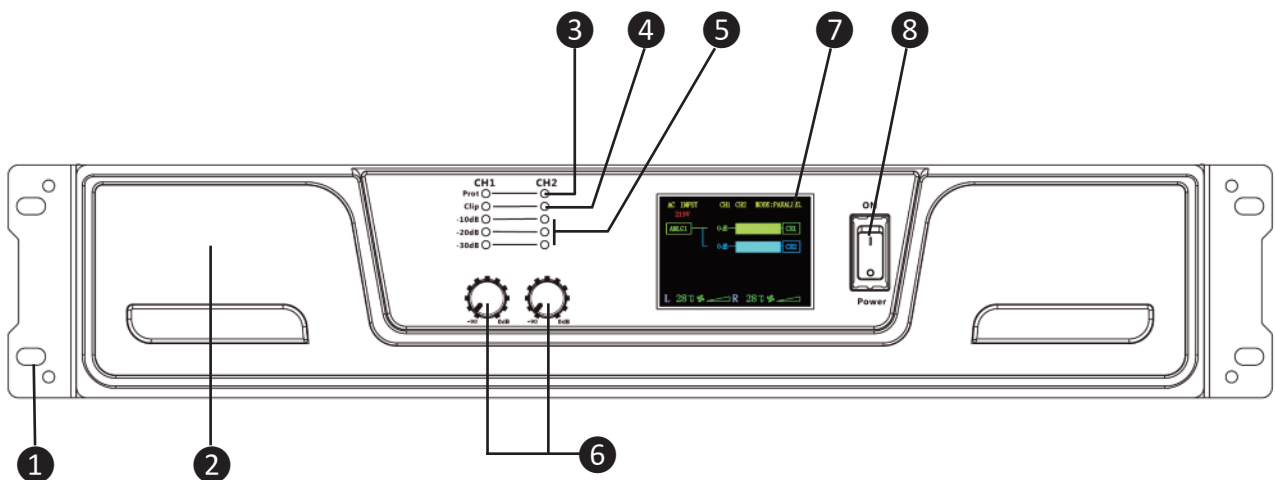
### Features:

- 2 Channels designed for permanent installations
- Unique LED display shows working mode, temperature, supply voltage, signal levels
- Compact 2U Housing (88mm high)
- Built-in Filter low pass filter at 150Hz
- Built-in High pass filter 30Hz for speaker protection
- Built-in Limiter
- Soft Start turn on
- Over Heat, short circuit, DC protection
- Balanced XLR Input Connections with link outs
- Speakon and Terminal Post Output Connections

# Important Precautions & Instructions

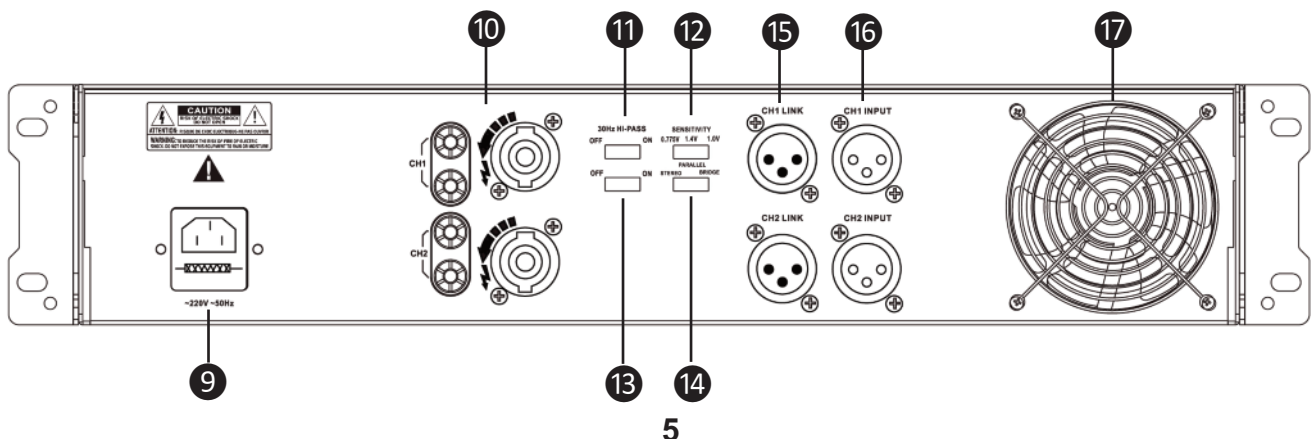
## Functions Front Panel

1. **Rack Brackets:** For Fixing the Amplifier in a Case 19" 2 units
2. **Air Intake:** Cold air enters here to keep internal components cool, keep the foam clean.
3. **Protect LED:**
  - Lights briefly on power up
  - When the internal temperature becomes too high
  - When there is a technical fault: DC protection
4. **Clip LEDs:** Turn on when the amplifier is at its maximum, when distortion is detected. It will flash occasionally but should not stay on. If the lights are staying on the level controls will need to be reduced.
5. **Signal LEDs:** These light up when a signal is present.
6. **Gain Controls:** Adjust these controls to set the amplifier output. Each channel has its own gain and you can use these to set the maximum sound level for your system. In normal cases its best to have these set from 90-100% and control the output level from a mixer.
7. **LED Display:** Unique LED display shows input info, including working mode, temperature, signal levels, power supply voltage and fan speed.
8. **Main Switch:** Used to turn the amplifier on and off. After a few seconds the amplifier is ready to use.



## Functions Back Panel

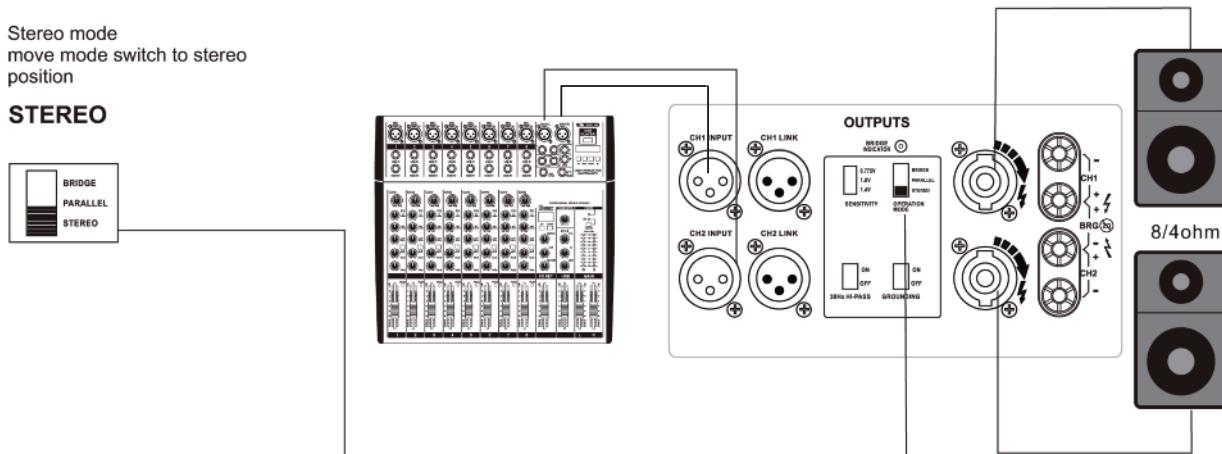
9. **Mains Input:** When all audio cables are connected, plug in the IEC connector then connect to a suitable mains supply.
10. **Speaker connections:** Either Speakon connectors can be used or bare wire can be connected into the binding terminal posts. Use +1 and -1 when wiring the Speakon connectors, leave +2 and -2 unconnected.
11. **High Pass Filter:** This is used to protect bass drivers from low frequency damage.
12. **Input Sensitivity:** With this switch you can adapt the input sensitivity to either 0.775V, 1.4V and 1V
13. **Low pass Filter:** Everything above 150Hz will be cut out, this is good for connecting sub woofers.
14. **Operation Mode selector switch:** Used to select the working mode of the amplifier, the most common mode is stereo. See 'how to use' further on for more info.
15. **Balanced XLR Signal Outputs:** Can be used to connect to the next amplifier.
16. **Balanced XLR Signal Inputs:** Used to connect a signal from a mixer, these can be balanced or unbalanced.
17. **Fan:** This helps to keep the amplifier cool. It is temperature controlled so will not always be operating. Do not block this fan or the one found on the side of the amplifier.



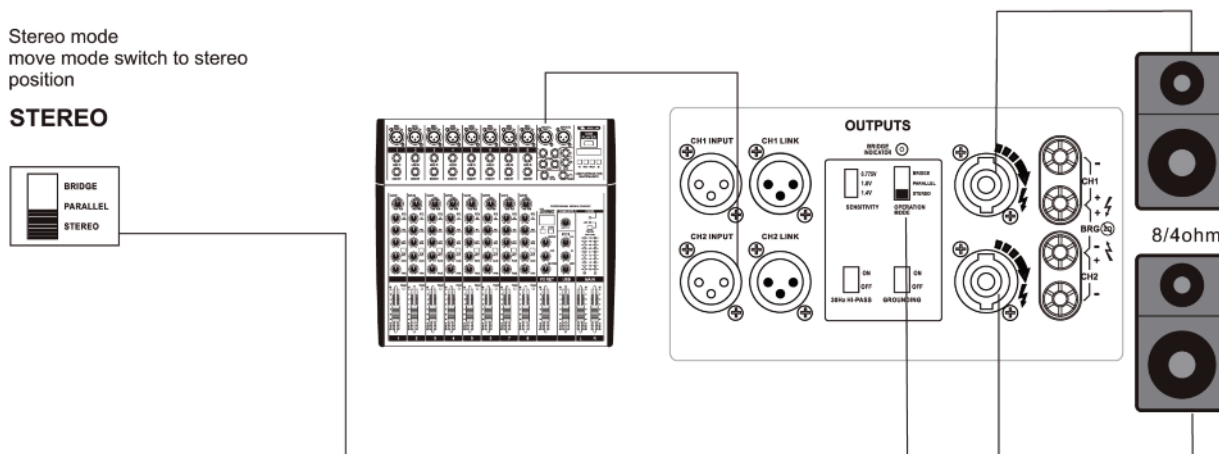
# Important Precautions & Instructions

## Setting the operation mode

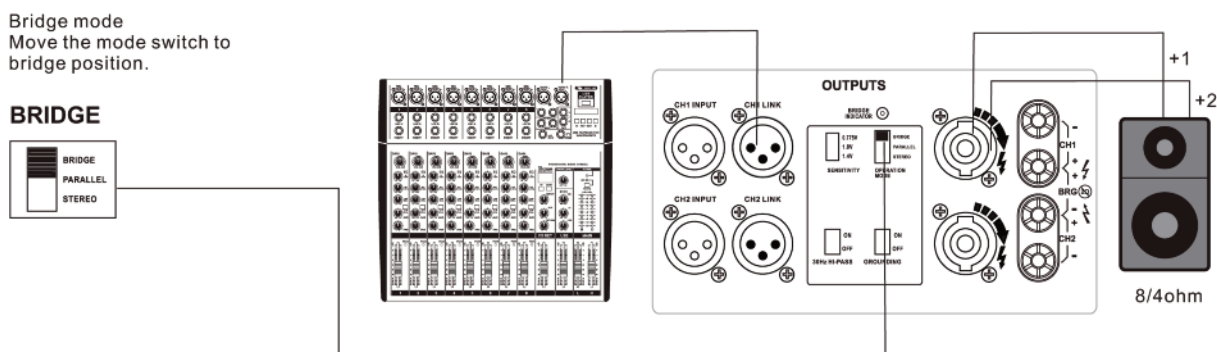
**Stereo mode:** Both channels operate independently. Channel 1 input is controlled by gain control one and the signal is then amplified to output channel 1. Channel 2 operates in the same way.



**Parallel Mode:** Channel 1 input and gain control 1 is active and the signal is amplified to output 1 and 2. Input 2 and gain control 2 will not function.



3. **Bridge Mode:** Channel 1 input and gain control 1 are active. Channel 2 and gain control 2 are inactive. The amplifier power is doubled. The speaker can be connected to the red terminal binding posts or using pin 1+ (for speaker +) and Pin 2+ (for speaker -) on the Speakon terminal output 1.



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## A note on speaker Impedance:

In parallel and stereo mode each output channel can have a minimum of a 4 Ohm load. In bridged mode the minimum is 8 Ohms.

## Installation, Cooling and Wiring

**Rack Mounting:** Due to the weight of the amplifier it is recommended to mount the amplifier into a rack with rear support shelf rails, so the total weight is not totally on the front rack ears.

**Cooling:** The ACP amplifier is right side and front cooled. Make sure these are not obstructed and the foam front is not clogged with dust. If fitted in a flightcase or rack, use 1 unit spacing panels to create some distance between multiple amps or the flightcase itself.

**Speaker Cabling:** Take this point seriously specially when using long cable runs. The load impedance can be altered when using long cable runs. This will reduce output power and contribute to power loss through the cable by turning power into heat. Most importantly use a good quality cable with a good copper content and use the shortest possible cable lengths. The chart below gives some examples and recommended maximum distances. See the connector wiring chart for further information of wiring connectors.

Cross Section	AWG	Ohms/Meter	2 Ohms	4 Ohms	6 Ohms	8 Ohms
0.75mm <sup>2</sup>	18	0.0224	4m	8m	12m	16m
1.5mm <sup>2</sup>	15	0.0112	8m	16m	24m	32m
2.5mm <sup>2</sup>	13	0.00672	15m	30m	45m	60m
4mm <sup>2</sup>	11	0.0042	22.5	45m	60m	90m

## Input Connections:

Always use a good quality screened cable. Make sure soldering has been done correctly, bad solder joints can cause damaged or intermittent faults to occur. Try to always use balanced connections, if this is not possible try to keep unbalanced cables as short as possible. See the connector wiring chart further on when wiring connectors.

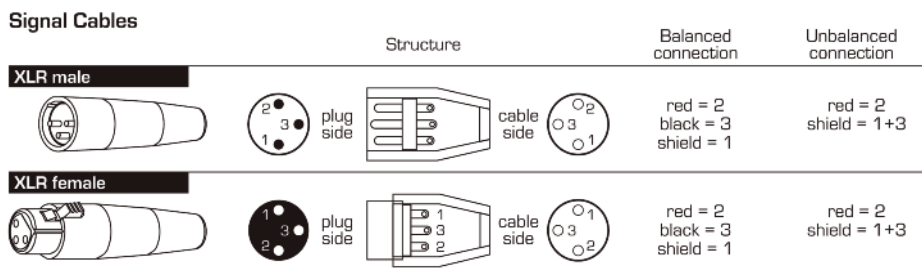
### Powering Up for the first Time

1. Turn down all volumes.
2. Switch on your audio devices ie cd player, tuner tape deck, PCs.
3. Switch on your mixer.
4. switch on any processors between mixer and amplifier.
5. Switch on the amplifier.
6. Turn up slightly the audio source volume, then mixer volume, them processor volume.
7. Turn up the amplifiers volume slowly.
8. Make any adjustments to the volume settings.

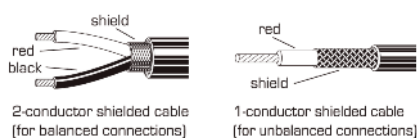
Do the reverse of this when powering down.

It is best to turn the amplifiers volumes up to max or almost maximum. Then control the output volume via the mixer. Remember to try and avoid any distortion and do not over drive any audio equipment's inputs. Always try and keep mixer gains as low as possible and do not say turn the input gain on a mixer down and turn the main master output to maximum to achieve the correct levels, as you may also be amplifying unwanted signal noise.

## Connection Chart:

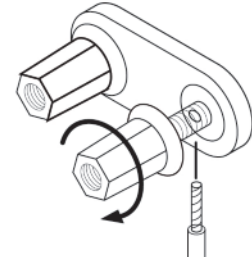
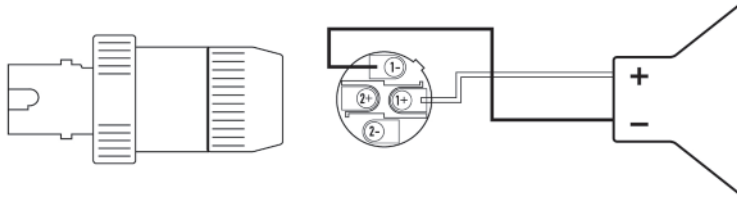


## Cable Types:



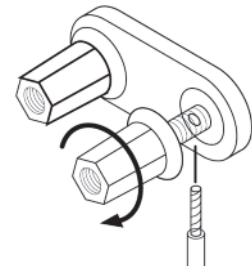
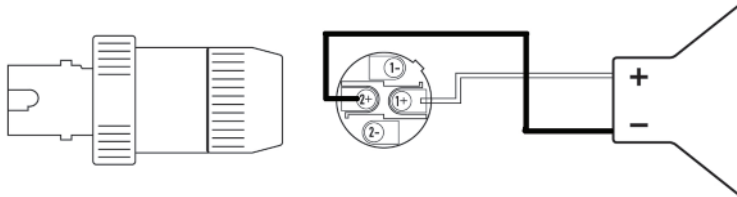
## Important Precautions & Instructions

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### **Stereo and Parallel Speaker Connection:**

This shows suitable connections for parallel and stereo mode. Do not connect to pins 2+ and 2- as this may damage the amplifier.



### **Bridge Connection:**

This shows suitable connections for bridge mode. Either connect between 2+ and 1+ on the Speakon plug or use both red binding posts for this mode.