



DA-2800

**2,800 Watt Four-Channel
Professional Power Amplifier**

DA-2800DSP

DA-2800

Preliminary Operating Instructions

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Important safety instructions



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

"WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE AND OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS"

"TO COMPLETELY DISCONNECT THIS APPARATUS FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE"

"THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY ACCESSIBLE"

SAFEGUARDS: Electrical energy can perform many useful functions. This unit has been engineered and manufactured to assure your personal safety. Improper use can result in potential electrical shock or fire hazards. In order not to defeat the safeguards, observe the following instructions for its installation, use and servicing.

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet(*).
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

EXPLANATION OF GRAPHICAL SYMBOLS:



The Lightning Flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons".



The exclamation point 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 product".



Warnings

Location:

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. Excessive heat can adversely affect the cabinet and internal components. Installation of the amplifier in a damp or dusty environment may result in malfunction or accident.

Precautions regarding installation:

Placing and using the amplifier for long periods on heat-generation sources will affect performances. Avoid placing the amplifier on heat-generating sources. Install this amplifier as far as possible from tuners and TV sets. An amplifier installed in close proximity to such equipment may cause noise or degradation of the picture.

WARNING: To prevent fire or electric shock:

- the ventilation openings must not be impeded by any items as newspapers, table-clothes, curtains, etc.; keep a distance of at least 50cm from the front and rear ventilation openings of the amplifier.
- do not expose this equipment to rain or moisture.
- apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.



Safety Rules

- This device must be powered exclusively by earth connected mains sockets in electrical networks compliant to the IEC 364 or similar rules.
- Is absolutely necessary to verify this fundamental requirement of safety and, in case of doubt, require an accurate check by a qualified personnel.
- The constructor cannot be considered responsible for eventual damages caused to persons, things or data for the missing of accurate earth link.
- Before powering this device verify that the amplifier is supplied with the correct voltage rating.
- Verify that your mains connection is capable to satisfy the power ratings of the device.
- Do not spill water or other liquids into or on the unit.
- Do not use this unit if the electrical power cord is frayed or broken.
- Do not remove the cover. Removing the cover will expose you to potentially dangerous voltage.
- No naked flame sources such like lighted candles should be placed on the amplifier
- Provide sectioning breaker between mains connections and apparatus. Suggested device is 10A/250Vac (230Vac mains voltage) or 16A/250Vac (110Vac mains voltage), C or D curve, 10KA.
- Contact the authorized service center for ordinary and extraordinary maintenance.



Speaker damage

The DA-2800 amplifier is among the most powerful professional amplifiers available and therefore, if used improperly, is capable of damaging Procella loudspeakers. Reduce power immediately if you hear any clipping distortion or other distress such as a woofer "bottoming out" - harsh pops or cracking distortion that indicate that the speaker voice coil or diaphragm is striking the magnet assembly.



Speaker output shock hazard

The DA-2800 amplifier is capable of producing hazardous output voltages. To avoid electrical shock, do not touch any exposed speaker wiring while the amplifier is operating.

This manual contains important information on the proper and safe operation of your DA-2800 amplifier. Please read it carefully before operating your amplifier. If you have any questions, contact your Procella dealer or distributor.

Introduction

Procella's DA-2800 amplifier delivers professional quality audio amplification, in a highly efficient package that delivers high power and long term reliability for any and all Procella Audio system installations.

Advanced Amplifier Technology

With advanced class-D technology, the DA-2800's offers very high efficiency and delivers more power to the loudspeakers with much reduced heat dissipation in comparison to conventional amplifiers. In addition, this greater efficiency enables the dimensions, weight and power consumption of the amplifier to be reduced. The output stages of the amplifiers typically run at 95% efficiency, dissipating only 5% of the input energy as heat.

One of the most interesting characteristics is that DA-2800's efficiency is almost independent of output level. Conventional amplifiers achieve their best efficiency only at full rated power output. Since standard music has an average power density of 40% of the maximum level, conventional amplifiers can easily generate 10 times more heat than the DA-2800 for the same playback volume level.

Superior Sound Quality

The crystal-clear high frequencies and extraordinarily tight, well-defined low end of the DA-2800 make it one of the most accurate audio reproducers available. Its patented design features ensure optimal sound quality and very high measured performance in parameters such as distortion, frequency response, slew rate, power bandwidth and dumping factor.

Digital Technology

The DA-2800 design is based on mature PWM technology that has been used for 30 years or more in power supplies and inverters. PWM provides high reliability, small size, low weight and high efficiency. A PWM converter works as a high frequency sampler, converting the variable amplitude (audio) signal into an impulse sequence with average value equal to the audio input. The DA-2800 amplifier uses very high sampling frequencies to ensure a very high level of performance across the audio band.

High Reliability

The DA-2800 has highly robust protection against virtually any possible problem in operation and is designed to work under virtually all conditions. It delivers maximum power with maximum safety and increased long-term reliability.

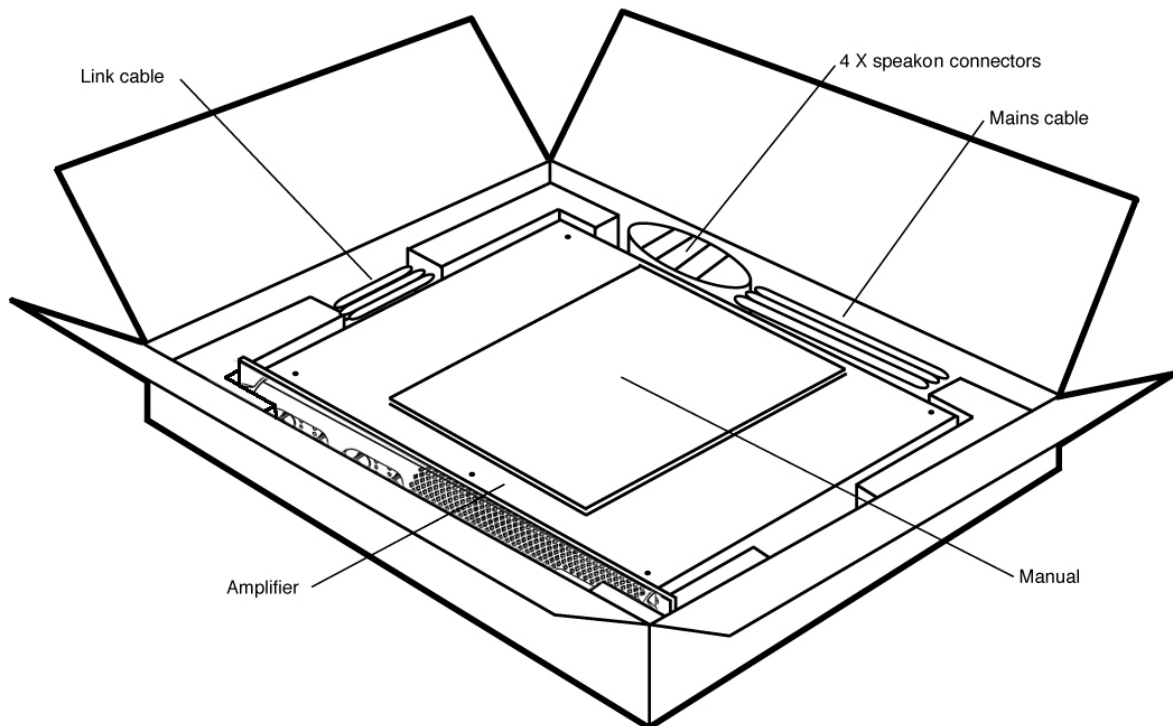
1. Installation and operation

1.1 Unpacking

Carefully open the shipping carton and check for any visible damage; the figure below shows how the product is packed. Every Procella amplifier is completely tested and inspected before leaving the factory and should arrive in perfect condition. If you find any damage, notify the shipping company immediately. Be sure to save the carton and all packing materials for the carrier's inspection.

Your amplifier carton should have the following contents:

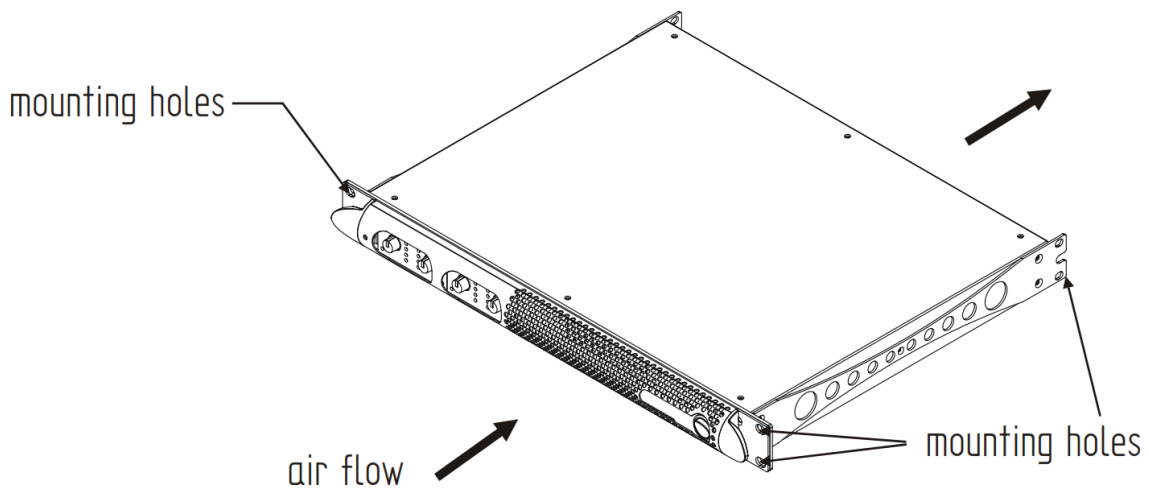
- Amplifier
- Operating Instructions
- Four Neutrik Speakon speaker wire connectors
- Link cable
- Mains cable



1.2 Installation: Mounting

The DA-2800 amplifier is sized for a standard 19" rack mount, with four front panel mounting holes and two rear mount lateral holes. The amplifier must be fixed into the rack at both the front and back to avoid mechanical damage. Your DA-2800 amplifier uses a forced-air cooling system to maintain a low, even operating temperature. Drawn by an internal fan, air enters through the slots in the front panel and flows over and through components. The DA-2800 features an 'intelligent' variable-speed DC fan that is controlled by heat sink temperature sensing circuits. Fan speed increases only when the temperature of the heat sink requires it, keeping fan noise to a minimum and helping to cut dust accumulation inside. Under extreme thermal load, the fan will force a very large volume of air through the heat sink. If the heat sink gets too hot, its sensing circuit will reduce the output power. If the amplifier overheats, another sensing circuit shuts down its circuit to cut off power until it cools to a safe temperature.

The exhaust cooling air is forced out through the rear of the chassis (see below), so make sure there is enough space around the sides of the amplifier to allow the air to escape. If it is rack mounted, make sure the exhaust air can flow without resistance. Amplifiers may be stacked directly on top of each other (no space needed between units), starting from the bottom of the rack.



1.3 Operating Precautions

Make sure the AC mains voltage matches the voltage printed on the cover of the amplifier. If your amplifier does not have the correct voltage indicated, contact your dealer or distributor immediately. Damage caused by connecting the amplifier to improper AC voltage is not covered by the warranty. Make sure the power switch is off before making any input or output connections.

It is always a good idea to have the gain controls muted during power-up to prevent speaker damage if there is a high signal level at the inputs.

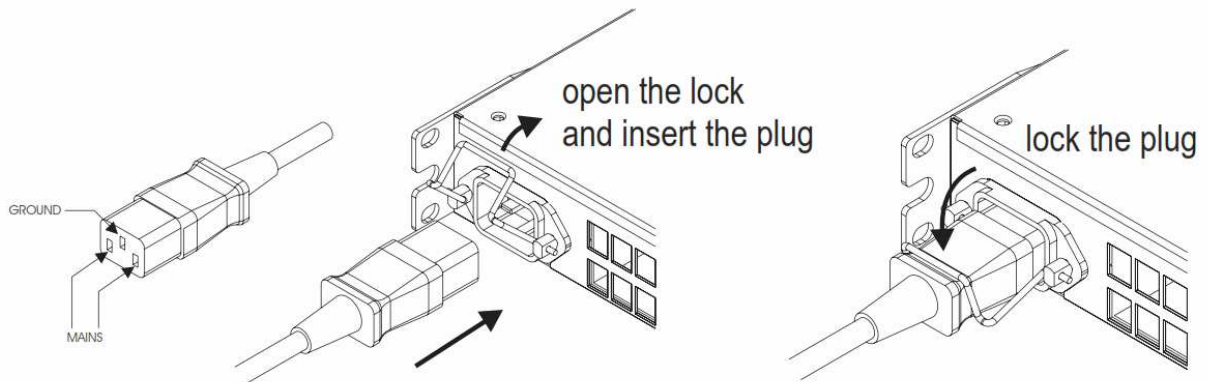
Always use high quality interconnect and speaker cables. Most intermittent problems are caused by faulty cables. Use good-quality connectors and wire to ensure trouble-free reliability.

1.4 AC Mains connection

Warning: before connecting the mains, be sure that the amplifier is set for the correct mains voltage.

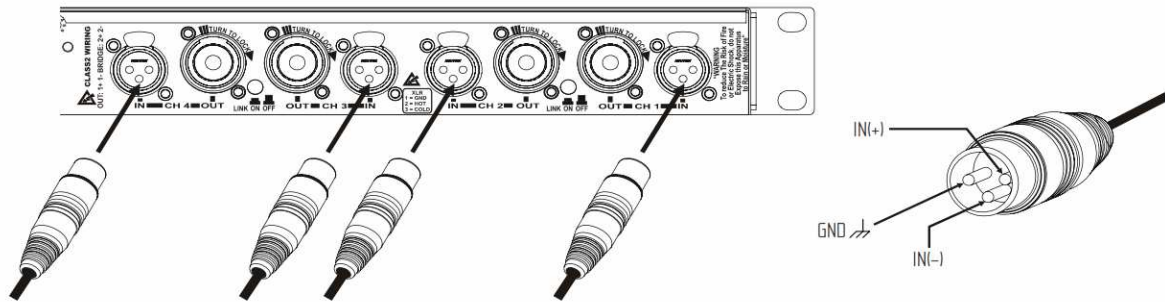
The AC Mains connection is made via an IEC type connector on the rear side of the panel. The figure below shows the connection to the amplifier. A locking clip is provided to assure a robust connection.

Be sure that your AC mains power source has the requirements indicated in this manual. For safety reasons, it is very important that the amplifier's ground is connected. Do not use adapters that disconnect the ground.

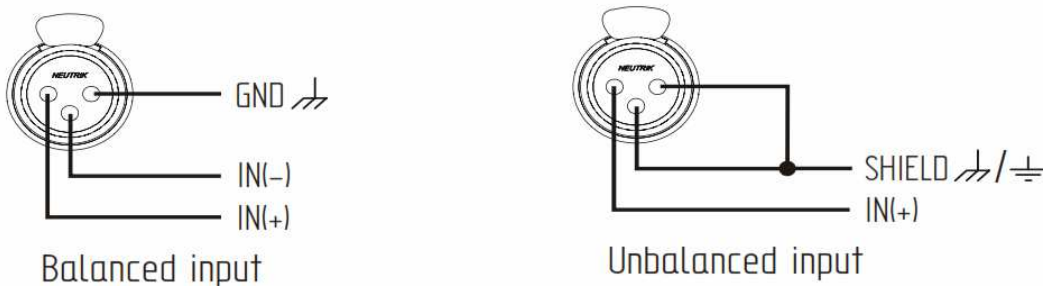


1.5 Connecting Inputs

Input connections are made via 3-pin XLR-male connectors to XLR jacks on the back panel of the amplifier. Connection details are shown below. The proper wiring polarity for the XLR connector is shown at right.



The figure below shows proper wiring for both balanced and unbalanced line inputs. Either type of configuration can be used, but we recommend using balanced connections because unbalanced cables (especially with long runs) can introduce noise into the audio system.



1.6 Link Switch and Bridged Mode

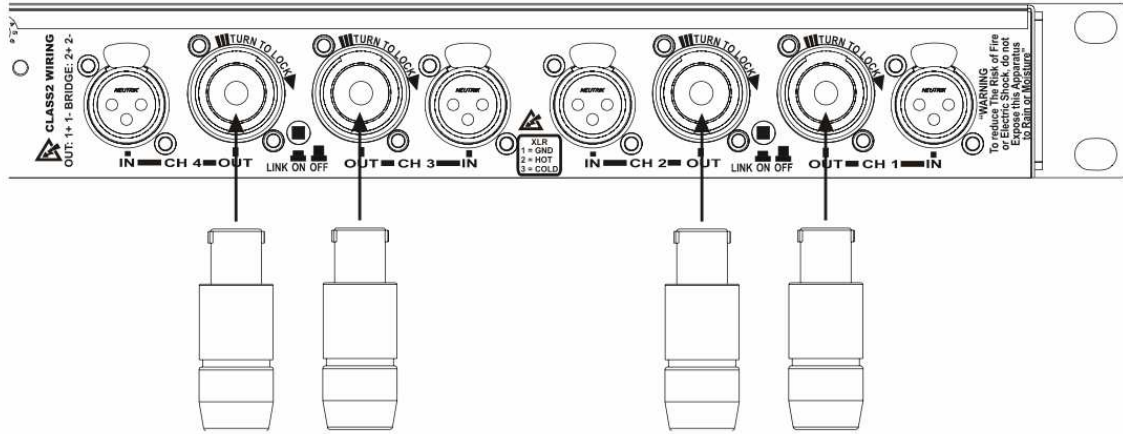
Each pair of inputs can be linked through a switch on the back panel of the amplifier. One switch links Input 1 and Input 2, and a second switch links Input 3 and Input 4.

For Bridged Mode operation, this switch must be set to “on” for the amplifier channel pair being bridged for maximum output. The Link switch is also used when one input signal is to be reproduced by two amplifier channels (such as for multiple subwoofers or surround channels).

When needed, the unused input connector of a linked connector pair can be used to connect an additional amplifier channel, by using the Link cable provided with the amplifier. This is necessary with certain speaker configurations, such as with the bridged channels needed for the P815 and the P18 loudspeakers. See Section 7, Programming, for applications where this is needed.

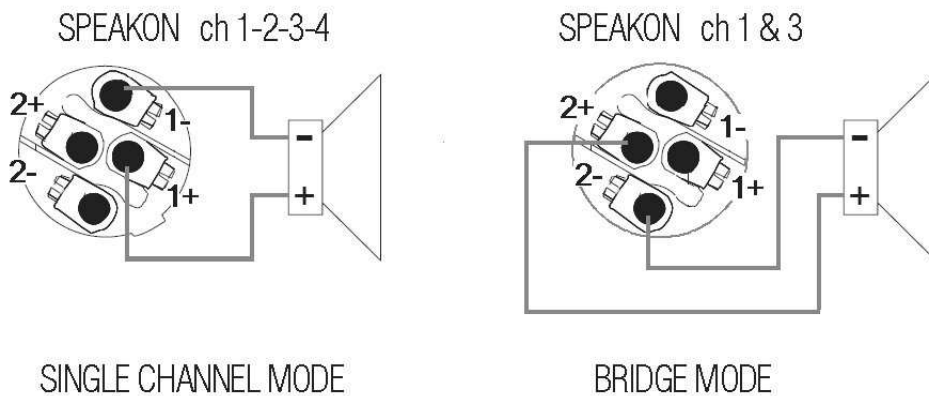
1.7 Connecting Outputs – Single Channel and Bridged Mode

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



Output connections are made via Neutrik Speakon connectors. The speaker wire for each channel will need to be connected to a Speakon connector per the drawing below. In single channel mode, the 1+ pin of the Speakon connector must be used for the positive output of the channel and the 1- pin of the Speakon connector is to be used as the negative output of the channel. In bridged mode, the 2+ pin of the Speakon connector is used for the positive output and the 2- pin is used for the negative output.

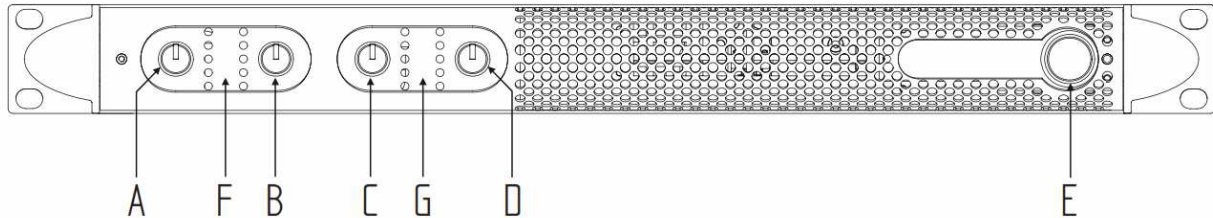
The figure below shows the wiring connection of the Speakons to the speakers. Pay attention to the position of the Link switch: in Bridged Mode, set the Link switch to "on" and set the individual gain controls of each pair of channels to the same level.



2. Setup and settings

2.1 Introduction

The figure below shows the front panel of the DA-2800. The front panel controls and indicators give the user functional control and detailed operational information regarding the status of the amplifier. The gain controls operate on a logarithmic scale from -8 to +32dB.

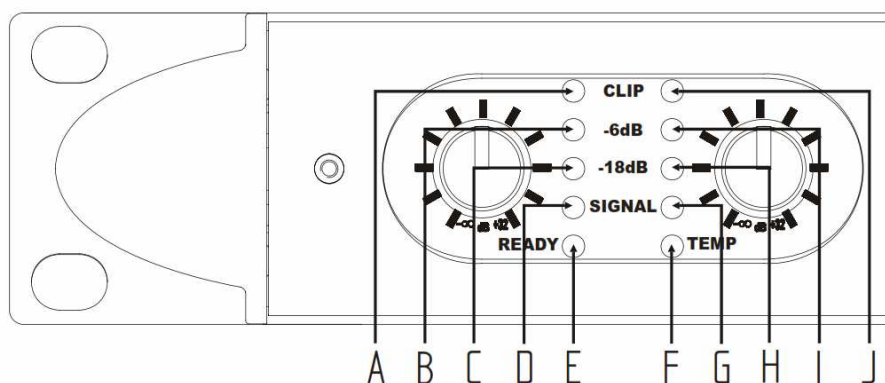


- | | |
|-----------------------------|-------------------------------------|
| A - Gain control channel 1 | E - Power switch |
| B - Gain control channel 2 | F - LED indicators channel 1 and 2 |
| C - Gain control channel 3* | G - LED indicators channel 3 and 4* |
| D - Gain control channel 4* | |

2.2 LED indicators

The figure below shows the front panel of the DA-2800 (two channels only).

- The CLIP LED illuminates when the output stage of the corresponding channel has reached maximum output and is clipping.
- The SIGNAL LED indicates that there is a signal present at the input stage of the corresponding channel.
- The -18dB and -6dB LEDs indicate output levels relative to maximum output.
- The READY LED illuminates when the amplifier is ready to use and its operational status is nominal.
- The TEMP LED indicates that the output power for the corresponding channel is being limited because of overheating. See the next section for more information.



- | | |
|--|--|
| A - Clipping and protection indicator channel 1 (or 3) | F - Over-temperature indicator |
| B - -6dB output level indicator channel 1 (or 3) | G - Signal presence indicator channel 2 (or 4) |
| C - -18dB output level indicator channel 1 (or 3) | H - -18dB output level indicator channel 2 (or 4) |
| D - signal presence indicator channel 1 (or 3) | I - -6dB output level indicator channel 2 (or 4) |
| E - "Ready" indicator | J - Clipping and protection indicator channel 2 (or 4) |

3. Protection

3.1 Turn-On/Turn-Off muting

For about four seconds after turn-on, and immediately at turn-off, the amplifier outputs are muted.

3.2 Short circuit protection

A short circuit protection system safeguards the amplifier's outputs against short circuits and other stressful loads. It is completely inaudible when inactive. In case of a short circuit, the red LED will illuminate. The amplifier reset protection mode resets after 2 seconds.

3.3 Thermal protection

The DA-2800 amplifier uses a continuously variable speed fan to assist cooling (the fan speed changes in response to the amplifier's cooling needs). If the heatsink temperature reaches approximately 75°C, the TEMP LED illuminates, and the output power is reduced to prevent damage to the output stage. If the temperature is more than 85°C the thermal sensing circuitry will mute each power section channels. Once the heatsink has cooled down, the amplifier will automatically unmute, and the LED shuts off at 75°C. The amplifier temperature can be lowered by reducing the output power.

3.4 DC fault protection

If DC or excessive subsonic energy appears at a channel output, an instantaneous protection circuit will mute both channels of the amplifier. This amplifier shutdown protection is used in place of speaker relays, thereby improving the damping factor and reliability of the DA-2800 amplifier.

3.5 Input/Output protection

An ultrasonic network decouples RF from the outputs and keeps the amplifier stable with reactive loads.

4. User maintenance

4.1 Cleaning

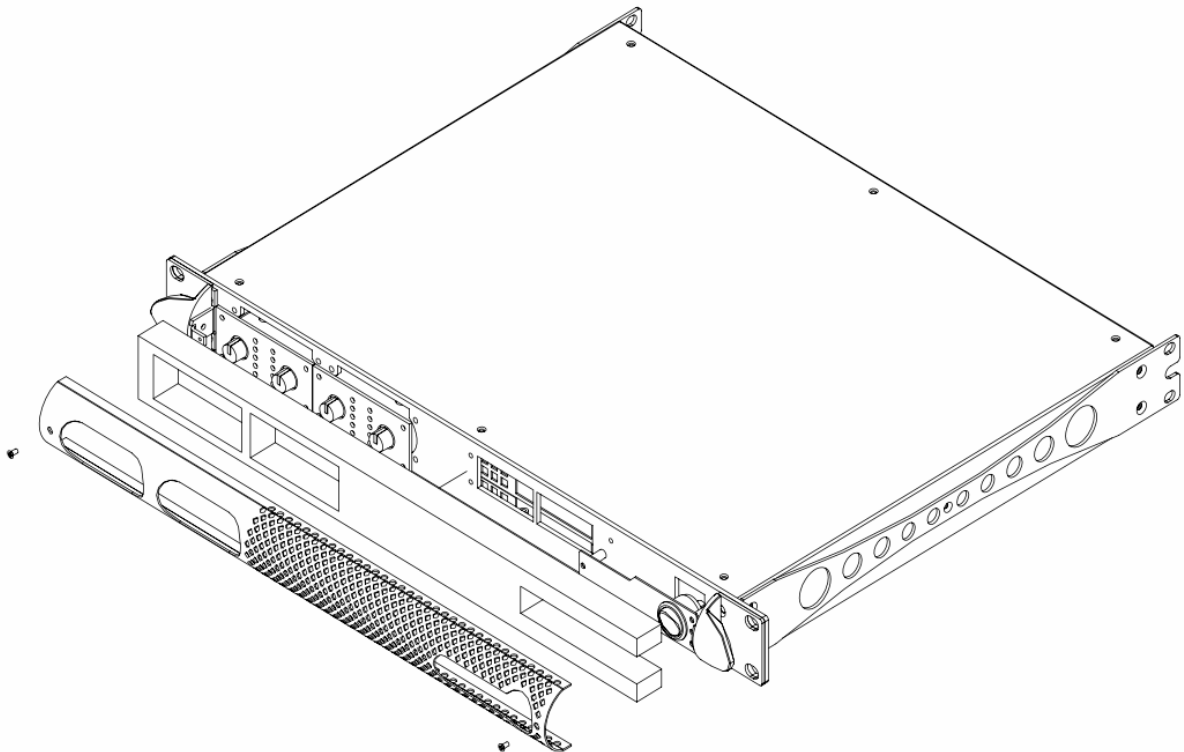
Disconnect the amplifier from the AC main source first; use a soft cloth and mild non-abrasive solution to clean the faceplate and chassis.

4.2 Service

There are no user-serviceable parts in your DA-2800 amplifier. Refer servicing to qualified technical personnel. In addition to having an in-house service department, If your DA-2800 amplifier needs repair, contact your Procella dealer or distributor, or contact the Procella Service department, to determine where your amplifier should be sent for repair service.

4.3 Dust removal

Especially in a dusty environment, the front side filters clog with dust after prolonged use, this will interfere with cooling. You may use compressed air to remove the dust from filters. To remove air filters (see the figure below) , unscrew two M2.5X6 screws and pull off the covering grill.



5. Warranty

Procella Audio components are warranted to be free from original manufacturing defects as follows:

For all speaker and crossover components, for a period of five years from date of delivery to the original purchaser from an authorized dealer.

For all amplifier components, for a period of two years from date of delivery to the original purchaser from an authorized dealer.

The Procella Audio obligation under this warranty is limited to repairing or replacing any component which it shall find defective in material or workmanship under normal non-commercial conditions of use. This warranty shall not apply to products which have been abused, modified, disassembled or repaired by anyone other than Procella Audio or one of its appointed service centers.

Products to be repaired under this warranty must be returned to the factory or designated service center with all transportation and insurance charges prepaid.

All warranties of whatever character are void and unenforceable if the component or any part thereof is not purchased from an authorized dealer.

This warranty is in lieu of all other warranties, expressed or implied, and of all other obligations or liabilities on our part, and Procella Audio neither assumes nor authorizes any other person to assume for it, any other liability in connection with the sale, repair, or return of any product.

We encourage all Procella owners to register their components. While this is not required to receive warranty benefits, it will allow you to receive warranty coverage without providing proof of purchase, and it will enable us to keep you advised of Procella product information, new products, and updates.

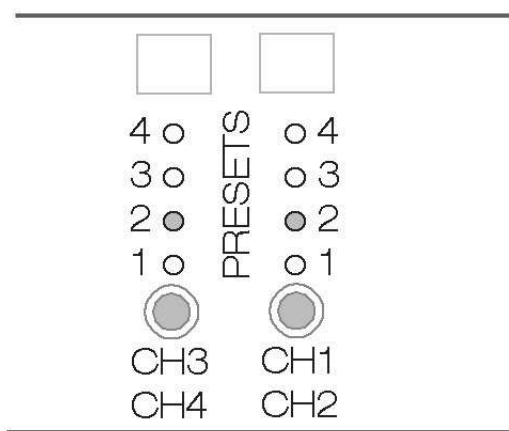
6. Assistance

Your local Procella dealer or distributor will be happy to provide support if there are any problems with your amplifier or if you need any additional information. If you cannot contact your local dealer or distributor, please send an email to support@procella-audio.com. Additional contact information is on the back cover of this manual.

Do not ship any unit to Procella for service without obtaining Return Authorization (RMA).

v

7. Procella Loudspeaker Programming (DA-2800 DSP Only)



Located on the back panel of the DA-2800 are two buttons labeled PRESET, each with four adjacent LED indicators. The layout is shown at left.

Each time a button is pressed, it advances the DSP setting to the next preset. The active preset is indicated by the illuminated LED. The right Preset button (Preset 1) controls Channels 1 and 2, and the left Preset (Preset 2) button controls Channels 3 and 4.

Each of these presets is pre-programmed with DSP settings customized for Procella loudspeakers. The standard DA-2800 has presets to cover the majority of applications necessary for Procella loudspeakers.

The P860 requires a custom configuration of the DA-2800, which should be ordered along with the loudspeakers. In addition, custom configurations for other speaker combinations are also available by special order. Please contact your Procella dealer or distributor for more information.

CAUTION: Use these presets ONLY with the specific speakers designated below. Use of the wrong preset can cause high levels of distortion and result in speaker damage that is not covered by warranty.

The charts on the next page below list the standard DA-2800DSP Preset configurations and the correct settings for each speaker. In some cases, such as with the P815-FP, one or two amplifier channels are available to drive either speakers (P6 or P8), or subwoofers (P10 and P15). These additional options are shown on the charts.

Instructions:

PRESET shows which numbered PRESET (on the back panel of the amplifier) should be used.

LINK shows the correct setting for the LINK switch and where the Link cable should be used.

INPUT shows which inputs should be used and where inputs are unused.

OUTPUT shows which outputs should be used for each speaker.

	P18-FP (1 subwoofer)	P815-FP (1 speaker) AND 1 P15-FP or 1 P10-FP	P610 (2 speakers)
PRESET 1 (Right)	1	2	3
PRESET 2 (Left)	1	2	3
Connect Link Cable?	Input 2 to Input 3	Input 2 to Input 3	No
LINK Ch.1+Ch.2	On	On	On
LINK Ch.3+Ch.4	On	Off	On
INPUT Ch. 1	P18	P815	P610 (A)
INPUT Ch. 2	Link cable to 3	Link cable to 3	not used
INPUT Ch. 3	Link cable to 2	Link cable to 2	P610 (B)
INPUT Ch. 4	not used	P15-FP or P10-FP	not used
OUTPUT Ch. 1	P18 driver 1 - Bridged	P815 Low Pass -Bridged	P610 (A) Low Pass
OUTPUT Ch. 2	not used	not used	P610 (A) High Pass
OUTPUT Ch. 3	P18 driver 2- Bridged	P815 HF	P610 (B) Low Pass
OUTPUT Ch. 4	not used	P15-FP or P10-FP	P610 (B) High Pass

	P6 or P8 (1 or 2 speakers) AND P15-FP or P10-FP (1 or 2 subwoofers)	P610 (1 speaker) AND P6 or P8 (2 speakers)	P610 (1 speaker) AND P15-FP or P10-FP (1 or 2 subs)
PRESET 1 (Right)	4	4	3
PRESET 2 (Left)	4	3	4
Connect Link Cable?	No	No	No
LINK Ch.1+Ch.2	Off	Off	On
LINK Ch.3+Ch.4	Off	On	Off
INPUT Ch. 1	P6 or P8 (A)	P6 or P8 (A)	P610
INPUT Ch. 2	P6 or P8 (B)	P6 or P8 (B)	not used
INPUT Ch. 3	P10 or P15 (A)	P610	P10 or P15 (A)
INPUT Ch. 4	P10 or P15 (B)	-	P10 or P15 (B)
OUTPUT Ch. 1	P6 or P8 (A)	P6 or P8 (A)	P610 Low Pass
OUTPUT Ch. 2	P6 or P8 (B)	P6 or P8 (B)	P610 High Pass
OUTPUT Ch. 3	P10 or P15 (A)	P610 Low Pass	P10 or P15 (A)
OUTPUT Ch. 4	P10 or P15 (B)	P610 High Pass	P10 or P15 (B)

8. Technical specifications

POWER REQUIREMENTS

Power supplyAC 100-115V or 230V (factory selection), +15 / -25%, 50-60Hz, 7.5 / 3A
 Operating temperature..... 0°C - 45°C
 Weight 7.3Kg
 External dimensions Standard rack 19" (W), 1 Units (H), 358 mm (D)

AUDIO SECTION

Bandwidth (1W, 8 ohm) 10Hz-30KHz
 Damping factor (8 ohm) at 100Hz > 5000
 Slew Rate (8 ohm) >40V/u s (Input filter bypassed)
 S/N ratio >113 dB/A (20Hz to 20KHz)
 Distortion THD, DIM, SMPTE..... < 0.5% from 1W to full power
 Inputs Balanced to ground, XLR female
 Impedance10Kohm each leg balanced to ground
 Gain32dB (32,30,28,26,24,22,20,18,14,4,-oo control knob detent selection)
 Outputs.....Neutrik 4-pole Speakon connectors (pins 1+/1- 2+/2- bridged)

OUTPUT

SPECIFICATIONS

Power Watts (EIAJ) per channel (all channels driven 1KHz, 1% THD, 115 or 30 V mains)

4 Ω	8 Ω	8 Ω bridged	16 Ω bridged
4 X 700W	4 X 360W	2 X 1400W	2 X 720W

FEATURES

LED bars indicators / Over-temperature forecasting / Thermal protection / Short circuit protection / Over-load output protection / Temperature controlled air cooling system / Clip limiter and permanent signal limiter /Gain control / Auto-reset system / Parallel inputs switch / Input signal presence LED

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