VocoPro®

PROFESSIONAL VOCAL SYSTEMS

VocoPro

FA-500

POWER

FEATHER AMP FA-500

VocoPro

STATUS

BRIDGE

THERMAL

OVERLOAD

Mp3

LEFT   RIGHT

FEATHER AMP

480W Professional Class D Power Amplifier

owner's manual

Table of Contents

Safety Instructions

CAUTION
RISK OF SHOCK

CAUTION: To reduce the risk of electric shock, do not remove cover (or back). No user-serviceable parts inside. Only refer servicing to qualified service personnel.

Explanation of Graphical Symbols

The lightning flash & arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of danger.

The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and servicing instructions.

WARNING
To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture.

1. **Read Instructions** - All the safety and operating instructions should be read before the appliance is operated.

2. **Retain Instructions** - The safety and operating instructions should be retained for future reference.

3. **Heed Warnings** - All warnings on the appliance and in the operating instructions should be adhered to.

4. **Follow Instructions** - All operating and use instructions should be followed.

5. **Attachments** - Do not use attachments not recommended by the product manufacturer as they may cause hazards.

6. **Water and Moisture** - Do not use this unit near water. For example, near a bathtub or in a wet basement and the like.

7. **Carts and Stands** - The appliance should be used only with a cart or stand that is recommended by the manufacturer.

7 A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause an overturn.

8. **Ventilation** - The appliance should be situated so its location does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation slots.

9. **Heat** - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

10. **Power Sources** - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

11. **Grounding or Polarization** - Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

12. **Power-Cord Protection** - Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

13. **Cleaning** - Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

14. **Power lines** - An outdoor antenna should be located away from power lines.

15. **Nonuse Periods** - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

16. **Object and Liquid Entry** - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

17. **Damage Requiring Service** - The appliance should be serviced by qualified service personnel when:

A. The power supply cord or plug has been damaged; or
B. Objects have fallen into the appliance; or
C. The appliance has been exposed to rain; or
D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
E. The appliance has been dropped, or the enclosure damaged.

18. **Servicing** - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

Note:
To CATV system installer's (U.S.A.): This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected as close to the point of cable entry as practical.

FCC Information

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!: This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Vocopro may void your authority, granted by the FCC, to use this product.

2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable(s) supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the U.S.A.

3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurances that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the owner's manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "Off" and "On", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Use power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter(s).

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300-ohm ribbon lead, change the lead-in to coaxial type cable.

If these corrective measures do not produce satisfactory results, please contact your local retailer authorized to distribute Vocopro products. If you can not locate the appropriate retailer, please contact Vocopro, 1728 Curtiss Court, La Verne, CA 91750.

CAUTION
The apparatus is not disconnected from the AC power source so long as it is connected to the wall outlet, even if the apparatus itself is turned off. To fully ensure that the apparatus is indeed fully void of residual power, leave unit disconnected from the AC outlet for at least fifteen seconds.

CAUTION:
**READ THIS BEFORE OPERATING YOUR UNIT**

1. To ensure the finest performance, please read this manual carefully. Keep it in a safe place for future reference.

2. Install your unit in a cool, dry, clean place - away from windows, heat sources, and too much vibration, dust, moisture or cold. Avoid sources of hum (transformers, v motors). To prevent fire or electrical shock, do not expose to rain and water.

3. Do not operate the unit upside-down.

4. Never open the cabinet. If a foreign object drops into the set, contact your dealer.

5. Place the unit in a location with adequate air circulation. Do not interfere with its proper ventilation; this will cause the internal temperature to rise and may result in a failure.

6. Do not use force on switches, knobs or cords. When moving the unit, first turn the unit off. Then gently disconnect the power plug and the cords connecting to other equipment. Never pull the cord itself.

7. Do not attempt to clean the unit with chemical solvents: this might damage the finish. Use a clean, dry cloth.

8. Be sure to read the "Troubleshooting" section on common operating errors before concluding that your unit is faulty.

9. This unit consumes a fair amount of power even when the power switch is turned off. We recommend that you unplug the power cord from the wall outlet if the unit is not going to be used for a long time. This will save electricity and help prevent fire hazards. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

10. To prevent lightning damage, pull out the power cord and remove the antenna cable during an electrical storm.

11. The general digital signals may interfere with other equipment such as tuners or receivers. Move the system farther away from such equipment if interference is observed.

NOTE:
Please check the copyright laws in your country before recording from records, compact discs, radio, etc. Recording of copyrighted material may infringe copyright laws.

Voltage Selector (General Model Only)
Be sure to position the voltage selector to match the voltage of your local power lines before installing the unit.

110V
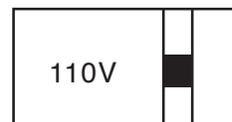
Welcome

And thank you for purchasing the **FEATHER AMP** from VocoPro, your ultimate choice in Karaoke entertainment! With years of experience in the music entertainment business, VocoPro is a leading manufacturer of Karaoke equipment, and has been providing patrons of bars, churches, schools, clubs and individual consumers the opportunity to sound like a star with full-scale club models, in-home systems and mobile units. All our products offer solid performance and sound reliability, and to reinforce our commitment to customer satisfaction, we have customer service and technical support professionals ready to assist you with your needs. We have provided some contact information for you below.

VocoPro
1728 Curtiss Court
La Verne, CA 91750
Toll Free: 800-678-5348
TEL: 909-593-8893
FAX: 909-593-8890

VocoPro Company Email Directory

Customer Service & General Information
info@vocopro.com

Tech Support
techsupport@vocopro.com

Remember Our Website
Be sure to visit the VocoPro website **www.vocopro.com** for the latest information on new products, packages and promos. And while you're there don't forget to check out our Club VocoPro for Karaoke news and events, chat rooms, club directories and even a KJ Service directory!

We look forward to hearing you sound like a PRO, with VocoPro, the singer's ultimate choice.

FOR YOUR RECORDS

Please record the model number and serial number below, for easy reference, in case of loss or theft. These numbers are located on the rear panel of the unit. Space is also provided for other relevant information

Model Number

Serial Number

Date of Purchase

Listening for a Lifetime

Selecting fine audio equipment such as the unit you've just purchased is only the start of your musical enjoyment. Now it's time to consider how you can maximize the fun and excitement your equipment offers. VocoPro and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion and, most importantly, without affecting your sensitive hearing.

Sound can be deceiving. Over time your hearing "comfort level" adapts to a higher volume of sound. So what sounds "normal" can actually be loud and harmful to your hearing. Guard against this by setting your equipment at a safe level BEFORE your hearing adapts.

To establish a safe level:
• Start your volume control at a low setting.
• Slowly increase the sound until you can hear it comfortably and clearly, and without
  distortion.

Once you have established a comfortable sound level:
• Set the dial and leave it there.
• Pay attention to the different levels in various recordings.

Taking a minute to do this now will help to prevent hearing damage or loss in the future. After all, we want you listening for a lifetime.

Used wisely, your new sound equipment will provide a lifetime of fun and enjoyment. Since hearing damage from loud noise is often undetectable until it is too late, this manufacturer and the Electronic Industries Association's Consumer Electronics Group recommend you avoid prolonged exposure to excessive noise. This list of sound levels is included for your protection.

Some common decibel ranges:

Level	Example
30	Quiet library, Soft whispers
40	Living room, Refrigerator, Bedroom away from traffic
50	Light traffic, Normal Conversation
60	Air Conditioner at 20 ft., Sewing machine
70	Vacuum cleaner, Hair dryer, Noisy Restaurant
80	Average city traffic, Garbage disposals, Alarm clock at 2 ft.

The following noises can be dangerous under constant exposure:

Level	Example
90	Subway, Motorcycle, Truck traffic, Lawn Mower
100	Garbage truck, Chainsaw, Pneumatics drill
120	Rock band concert in front of speakers
140	Gunshot blast, Jet plane
180	Rocket launching pad

-Information courtesy of the Deafness Research Foundation

Getting Started 1.0

Introduction 1.1

Thank you for purchasing the Feather Amp. By using Class D amplifier technology by ICEpower® - a subsidiary of Bang & Olufsen®, the Feather Amp provides audiophile sound quality while weighing in at under 6 lbs. Don't let the light weight fool you; the Feather Amp packs a serious punch. We are very proud of our new amplifier and think you will be too.
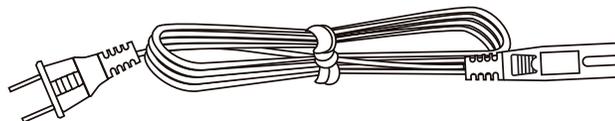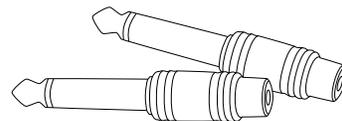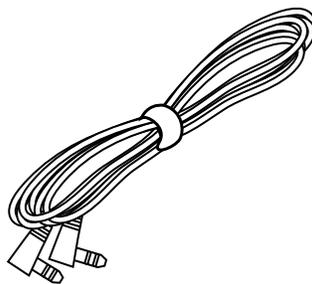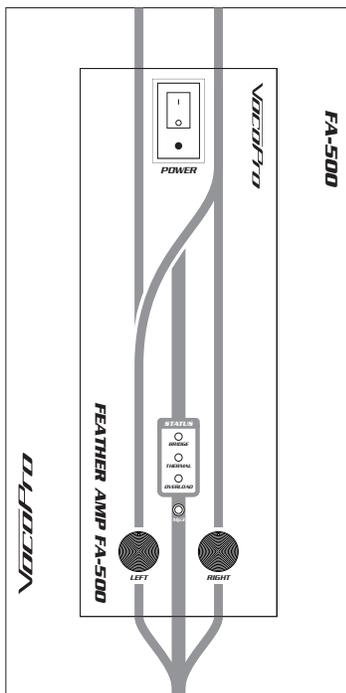
Features 1.2

• Power rating: 120W+120W RMS in stereo mode @ 4Ω, 480W RMS in bridge mode @ 4Ω
• Amplification by ICEpower®: Subdivision of the world famous Bang & Olufsen® Group
• Class D power: Exceptional power efficiency and low heat performance
• ¼" TRS audio inputs: Balanced and unbalanced audio connections
• 1/8" audio input: Front-mounted for easy connection to smartphones, tablets, and laptops
• Compact and lightweight: Small form-factor for custom installations
• Binding post speaker outputs: Versatile speaker connections
• Front panel LED indicators: Easy system status at a glance

Unpacking 1.3

Your Feather Amp has been thoroughly checked and tested prior to shipping and handling. Upon receipt, please make sure that the box and contents were not damaged en route. After unpacking, we recommend that you save the shipping box and packaging materials in case you need to send in your unit for service.
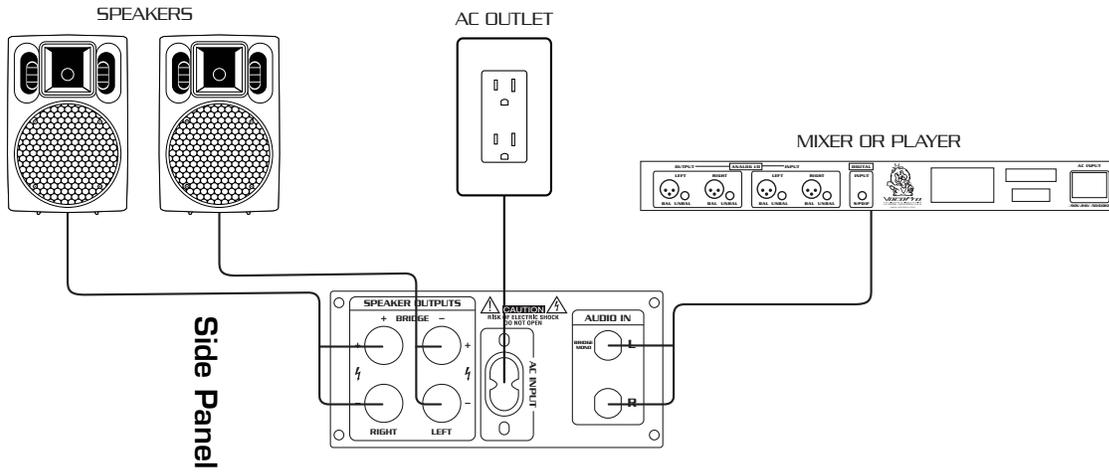
Box Contents 1.4

Feather Amp (1)
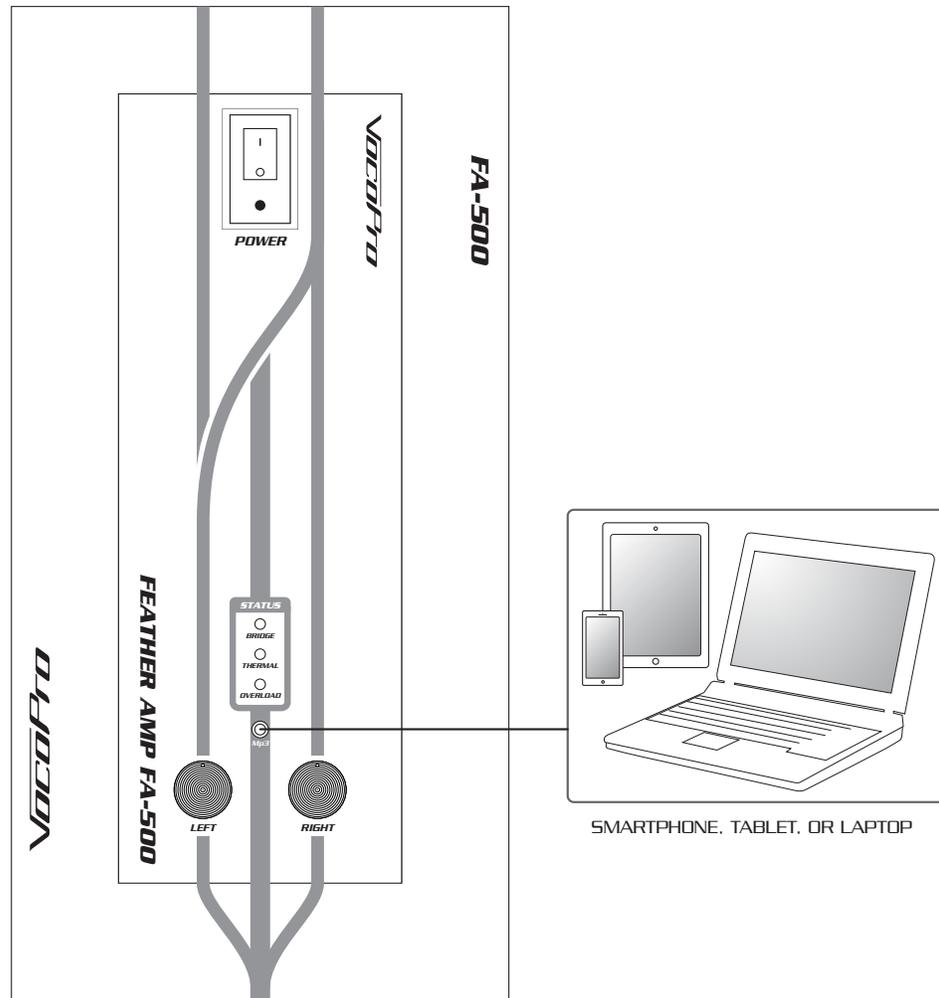RCA to ¼" mono adapters (2)
1/8" to 1/8" stereo cable
Power cable (1)

Getting Started

Connection Diagram 1.5

SPEAKERS

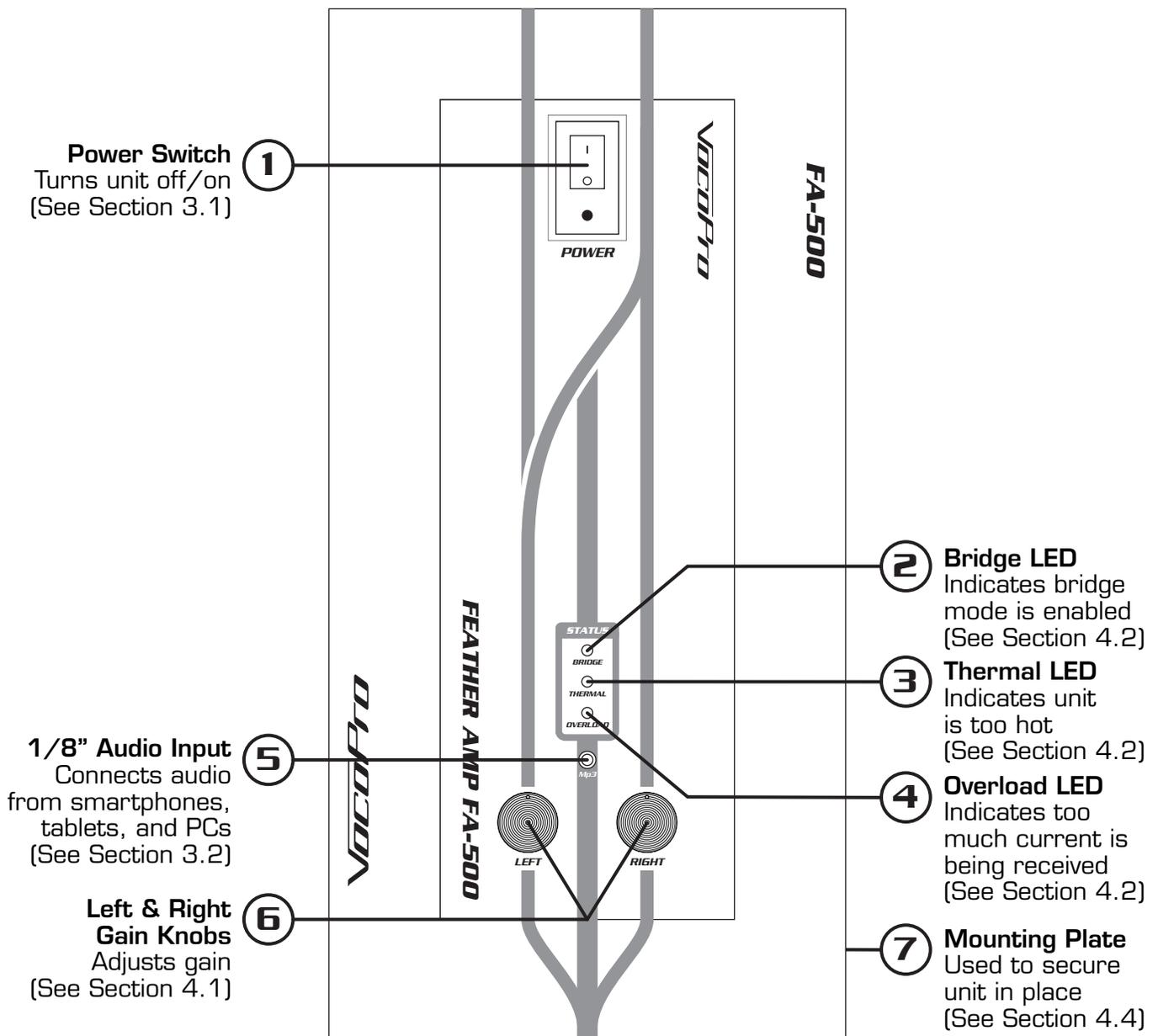AC OUTLET

MIXER OR PLAYER

Side Panel

SPEAKER OUTPUTS

+ BRIDGE −

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

AUDIO IN

AC INPUT

RIGHT   LEFT

BRIDGE MONO   L

R

Top Panel

VocoPro

FA-500

POWER

I
O

VocoPro

FEATHER AMP FA-500

STATUS

BRIDGE

THERMAL

OVERLOAD

Mp3

LEFT   RIGHT

SMARTPHONE, TABLET, OR LAPTOP

Features at a Glance 2.0

Face Panel 2.1	See Section/pg.	
1. Power Switch	3.1	pg.12
2. Bridge LED	4.2	pg.14
3. Thermal LED	4.2	pg.14
4. Overload LED	4.2	pg.14
5. 1/8" Audio Input	3.2	pg.12
6. Left & Right Gain Knobs	4.1	pg.14
7. Mounting Plate	4.4	pg.15

Power Switch
Turns unit off/on
(See Section 3.1)

1 POWER

VocoPro   FA-500

Bridge LED
Indicates bridge mode is enabled
(See Section 4.2) **2**

STATUS
BRIDGE
THERMAL
OVERLOAD

Thermal LED
Indicates unit is too hot
(See Section 4.2) **3**

FEATHER AMP FA-500

VocoPro

Mp3

LEFT   RIGHT

1/8" Audio Input
Connects audio from smartphones, tablets, and PCs
(See Section 3.2) **5**

Overload LED
Indicates too much current is being received
(See Section 4.2) **4**

Left & Right Gain Knobs
Adjusts gain
(See Section 4.1) **6**

Mounting Plate
Used to secure unit in place
(See Section 4.4) **7**

Features at a Glance

Connection Panel 2.2

	See Section/pg.	
1. Left & Right Speaker Outputs	3.3	pg.13
2. Power Jack	3.1	pg.12
3. Left & Right Audio Inputs	3.2	pg.12

SPEAKER OUTPUTS
+ BRIDGE –
+ +
RIGHT LEFT

⚠ CAUTION ⚡
RISK OF ELECTRIC SHOCK
DO NOT OPEN

AC INPUT

AUDIO IN
BRIDGE MONO L
R

Left & Right Speaker Outputs
Connect speakers here
(See Section 3.3)

Power Jack
Connect power here
(See Section 3.1)

Left & Right Audio Inputs
Connect audio input here
(See Section 3.2)
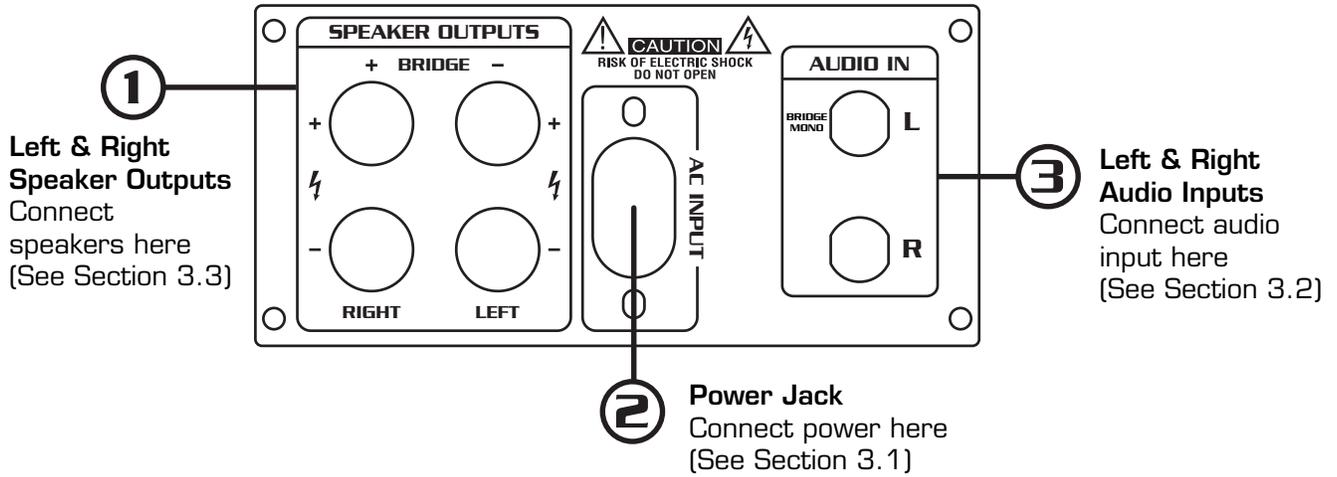
Fan Panel 2.3

	See Section/pg.	
1. Bridge Switch	4.2	pg.14
2. Fan	6.0	pg.17

BRIDGE

Bridge Switch
Used to turn bridge mode on/off
(See Section 4.2)

Fan
Cooling fan. Do not obstruct airflow
(See page 17)
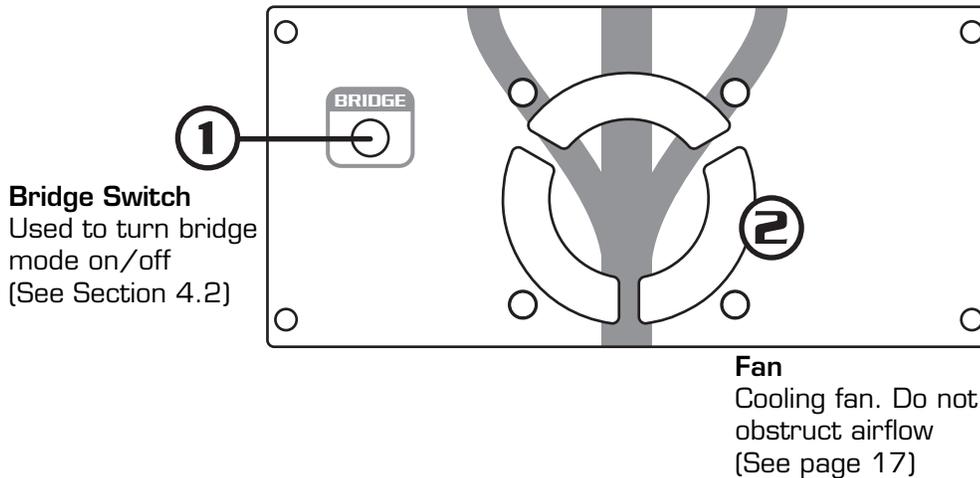
Getting Connected 3.0

Power 3.1

Using the supplied power cable, connect one end to an AC power receptacle, and connect the other end to the power jack on the Feather Amp's top panel.

NOTE: The Feather Amp is power configuration is factory set. For customers on a 220V power grid, make sure that your Feather Amp has been configured for 220V use. You can check this on the top panel power designation. If it is not configured for 220V use, contact VocoPro tech support at +1(909) 593-8893 or techsupport@vocopro.com.
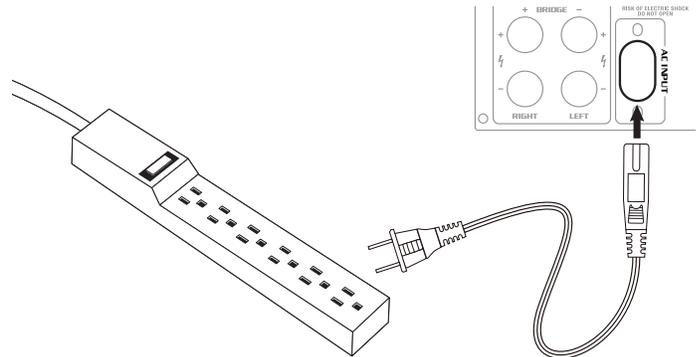
Audio 3.2

You can connect source audio to the ¼" jacks on the rear panel or to the 1/8" jack on the front panel. If your audio source has RCA outputs, you can use the ¼" to RCA adapters (included).

1/4" or RCA cables

1/8" cable
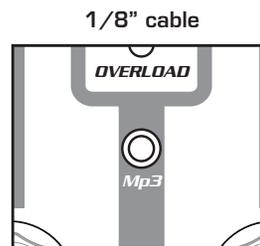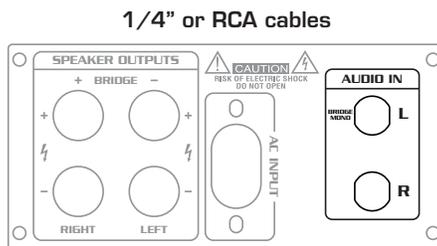
The ¼" input jacks on the rear panel accept both unbalanced TS and balanced TRS cables. If you are unsure to go balanced or unbalanced, here are a few general guidelines: 1) home stereo equipment typically uses unbalanced audio connections, while professional audio equipment uses balanced, and 2) if your source audio cable is less than 10 ft, unbalanced is fine; if it is more than 10 ft, go balanced.
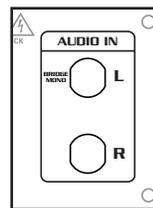
TS unbalanced

TRS balanced

If your audio source has RCA outputs, you can use the included RCA to ¼" adapters to make the connection. Simply plug each adapter into each ¼" jack, and make the connections using cables with RCA plugs.
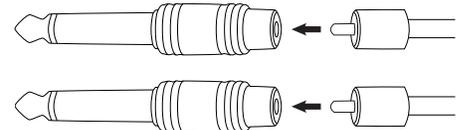
The front-mounted 1/8" offers a convenient way to connect audio from devices such as smartphones, tablets, computers, or other devices with an 1/8" audio output. This audio input is pre-amplified, so that audio signal will be louder from this input than the ¼" inputs on the rear panel.
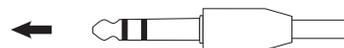
1/8" Stereo Audio Cable

Getting Connected

Speakers 3.3

Before we get into connecting speakers, there are two important issues to consider: speaker impedance and multiple speakers.

The Feather Amp is rated to perform as low as 3Ω. The Ω rating is a measure of the speaker's impedance. Basically, the rating tells you how much amplifier power will be passed through the speakers. For example, a 4Ω speaker has less impedance than an 8Ω speaker, and thus will offer less resistance to the flow of energy from the amplifier. With less resistance, a 4Ω speaker will pull more power from the amplifier than an 8Ω speaker will. Since 4Ω speakers are capable of drawing out more of the amplifier's power, 4Ω speakers will play louder than 8Ω speakers.

Speaker 1	Speaker 2	Overall Impedance
8Ω	8Ω	4Ω
6Ω	6Ω	3Ω
4Ω	4Ω	2Ω

When connecting two speakers to a speaker output, this changes the impedance. Basically, when two speakers of equal impedance are connected to a speaker output, the impedance is cut in half. So two 8Ω speakers connected to a single channel now has a 4Ω load. Because the Feather Amp is rated at no lower than 3Ω, you can only connect two speakers to a speaker output if they are 6Ω or above.

You can use speaker cable with either bare wire or banana plug ends.
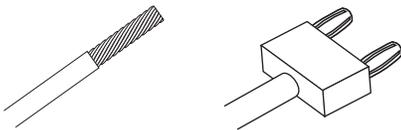
If you are using bare wire, loosen the plastic cap on each speaker connector by turning it counter-clockwise. This exposes the interior metal rod. You can either stick the bare wire through the hole in the rod, or line it around the rod itself. Then tighten the cap to secure the connection.
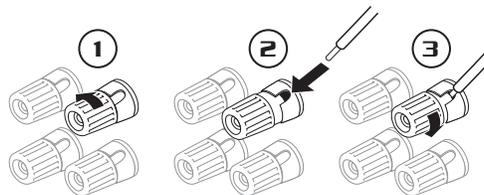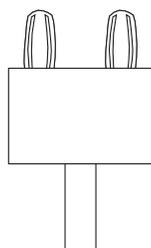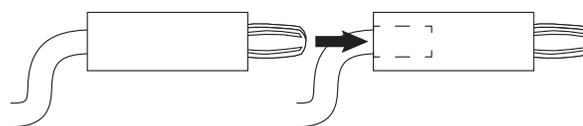

Banana Connector
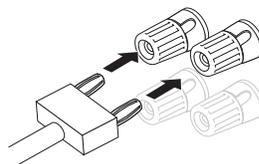
If using banana plugs, first ensure that the plastic caps are fully tightened on the speaker terminals. Connect the speaker cable by pushing the banana plug onto the speaker output with the pins properly aligned and color matched to ensure proper polarity. If connecting two speakers, stack the banana plugs.

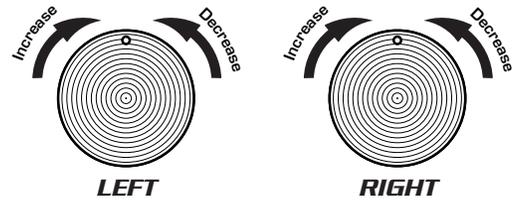**Single Speaker**   **Two Speakers**

Basic Operations 4.0

Adjusting Gain 4.1

Once all the connections are made, power on the Feather Amp and set the LEFT & RIGHT gain knobs to a safe level. Power on and start playback on your source audio device. Use the LEFT & RIGHT gain knobs to increase or decrease the input gain. Turn clockwise to increase gain, and counter-clockwise to decrease gain.

We recommend setting the volume level on your audio source device to an optimal level before noise (hiss/hum) occurs, then setting the gain on the Feather Amp to reach your desired volume output. For standard LEFT/RIGHT stereo audio connections, the LEFT gain knob controls the LEFT channel, while the RIGHT knob controls the left channel.


Bridge-tied load (BTL) 4.2

Bridge-tied load (AKA bridge mode) is a configuration that distributes all the Feather Amp's power to one channel. This is useful for situations where you need to only power a single speaker, but do not want to lose half the power. In BTL mode the amplifier will provide 450W RMS @ 4Ω or 225W RMS @ 8Ω.

Speaker Impedance	Output
8Ω	450W
4Ω	225W

To enable BTL mode, first power down the Feather Amp. Find the bridge button on the fan panel, and push it to the IN position.

IN
OUT
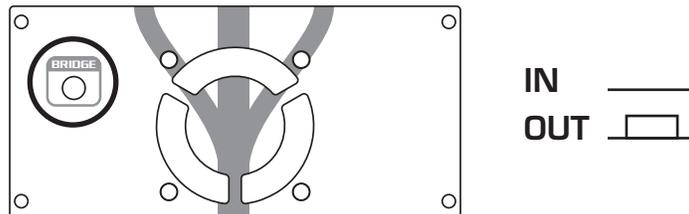
BTL mode requires that you change the speaker configuration. For BTL mode, connect a single speaker to the positive speaker terminals as shown in the diagram below.
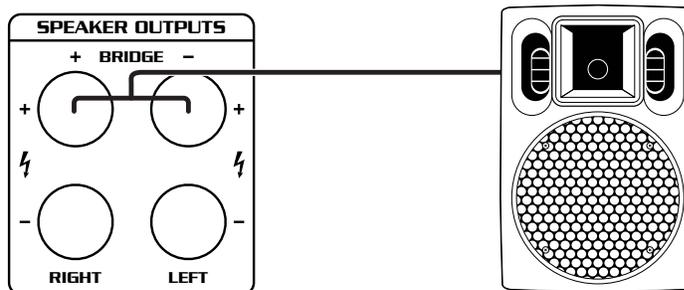

Note that if you have a stereo source audio signal, the LEFT/RIGHT channels will be mixed into a mono signal. You can still adjust the volume of the LEFT/RIGHT mix by using the LEFT and RIGHT gain knobs on the face panel.

Basic Operations

Status 4.3

The Feather Amp has three LED indicators to help you monitor status and troubleshoot system failures. The Bridge LED indicates BTL mode, which is a non-critical operational mode; however, the Thermal and Overload LEDs indicate a critical performance level and require immediate attention. If at any time, either Thermal or Overload protection is triggered, Feather Amp will either automatically cut its output power or shut down. In the case of a shut down the power supply will rapidly try to restart if the circuit's temperature is acceptable.
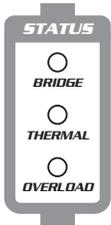
The Bridge LED will illuminate when BTL mode is enabled. When not in BTL mode, the LED will remain off.

The Thermal LED indicates thermal protection mode has been triggered. This occurs when the amplifier's continuous power handling is too high. If this occurs, please refer to the troubleshooting section.

The Overload LED indicates too much current (over 30A) is being received. In order to prevent an accidental shutdown during peak currents, Overload protection allows for 100ms to 500ms of operation before automatically shutting down.
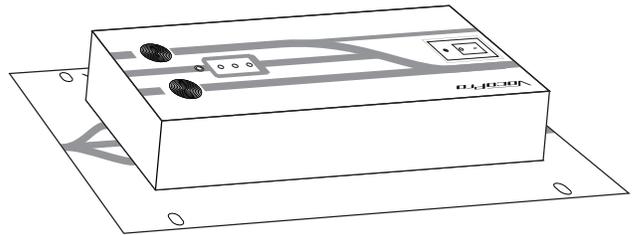
Mounting 4.4

The Feather Amp's mounting plate can be attached to the top or the bottom of its casing. This makes for versatile mounting options, both interior and exterior.
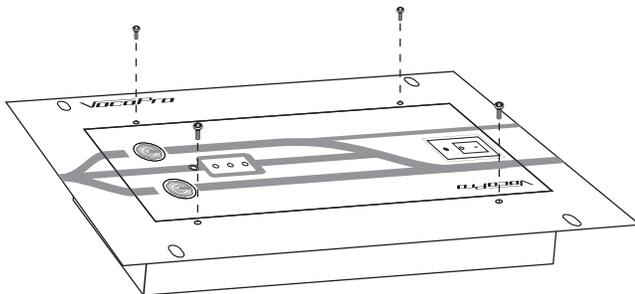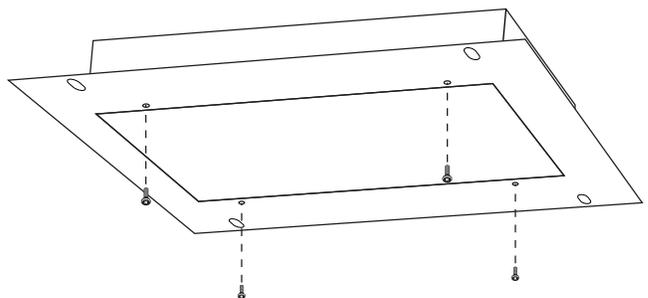
Top Mounted
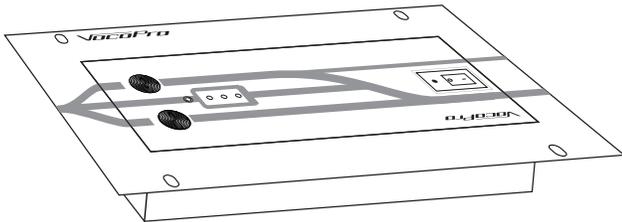
Bottom Mounted

To change the position of the mounting plate, remove the small fastening screws. Move the plate to the other position and secure with the screws.

Top View

Bottom View

Specifications 5.0

INPUTS SENSITIVITY:

LINE (Balanced) . . . . 1V/10K Ω (6.3mm Jack)

MP3 . . . . 500mV/22K Ω (3.5mm Jack)

POWER OUTPUT 1KHZ, @1% THD (STEREO):

     120W+120W into 4Ω 230V/50Hz

     105W+105W into 4Ω 115V/60Hz

POWER OUTPUT 1KHZ, @10% THD (STEREO):

     150W+150W into 4Ω 230V/50Hz

     130W+130W into 4Ω 115V/60Hz

FREQUENCY RESPONSE: . . . . .20Hz~50KHz +/-0.15dB

SIGNAL TO NOISE RATIO: 98dB

DAMPING FACTOR . . . . 200(8Ω (1KHz)

THD+N (4Ω AES17) . . . . 0.003% f=100Hz, Po=1W

DIMENSIONS & WEIGHT . . . . 482mm(W) x 265mm(D) x 155mm(H)

NET WEIGHT 12.0Kgs

Troubleshooting 6.0

There is no power
- Check the power cable connection both at the mains and the Feather Amp. Also make sure that the Feather Amp is configured for local power (115V/230V).

One channel is not working
- Check the source audio device. Is it configured correctly? Are both channels working? If using RCA cables, are both cables working and corrected properly?
- Is the unit in bridge mode? Refer to section 4.2.

Sound is distorted
- This is most likely occurring at the source device. Make sure the signal is set to an appropriate level. Are there clip LEDs lighting on the source device?

Thermal LED is lit or unit has shut down
- The unit has exceeded it maximum operating temperature. Check the impedance of connected speakers. Is the total load lower than 3Ω? Refer to section 3.3.
- Is the Feather Amp properly ventilated? The fan should not be blocked. NOTE: The fan is not always running. It is only activated when the unit requires cooling.

Overload LED is lit or unit has shut down
- The incoming current has exceeded 30A. Check the speaker cables. Is there a short? If using bare wire for speaker connection, is a strand of wire making contact with another speaker output contact? Refer to section 3.3.
- Check the speaker impedance load. Is the total load less than 3Ω? Refer to section 3.3.

Notes

Notes

PROFESSIONAL VOCAL SYSTEMS