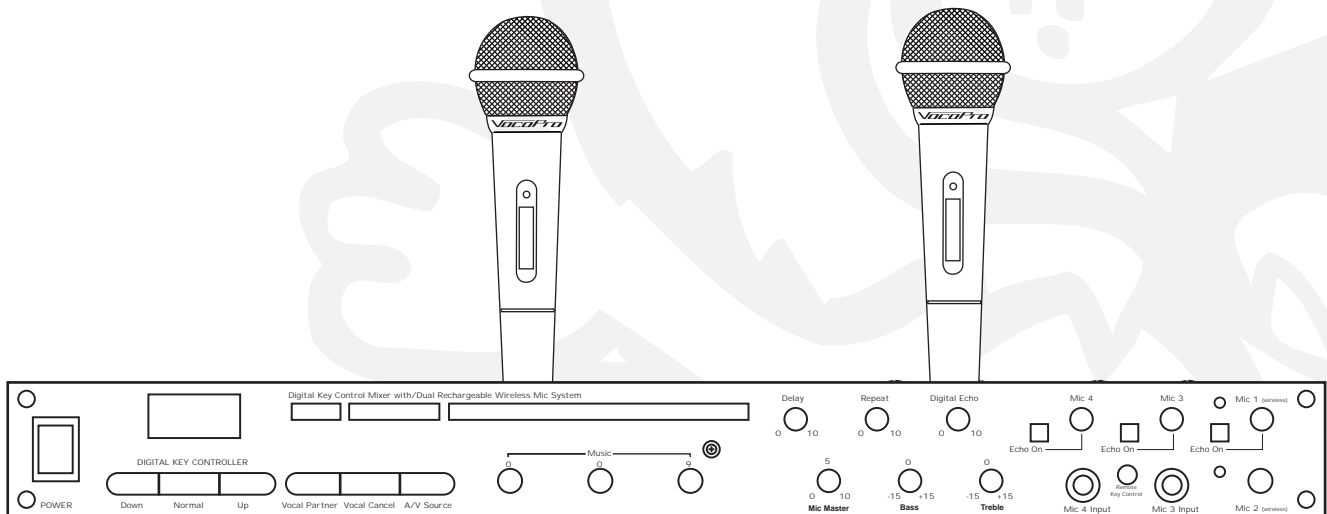


VocoPro

ULTIMATE CHOICE OF KARAOKE ENTERTAINMENT

DA-2277 FEATURES:

- Wireless Receiver Base Charges Wireless Microphones and Also Serves as a Microphone Docking Station
- 11-Step Digital Key Controller
- Professional Digital Echo with Repeat and Delay Controls
- Vocal Cancel and Vocal Partner Features to Remove Guide Vocals from Multiplex Karaoke Media
- Two Additional Mic Inputs for a Total of Four Microphone Channels w/ Individual Volume Controls
- Digital Echo On/Off Switch on 3 Mic Channels
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- Professional Dynamic Microphone Capsules for Professional Sounding Vocals
- 110V-220V Switchable



DA-2277

Digital Key Control Mixer with Dual Rechargeable Wireless Microphone System

DA-2277


Digital Key Control Mixer with Dual Rechargeable Wireless Microphone System

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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.

CAUTION: Read this before operating your unit

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 insure that the apparatus is indeed fully void of residual power, leave unit disconnected from the AC outlet for at least fifteen seconds.

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, 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.
12. When positioning your equipment, especially regarding speakers or other accessories, avoid positioning them over areas where they can fall and cause injury to yourself and others.



Welcome....



Thank you for purchasing the **DA-2277** 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 further strengthen 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 promo's. 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 Service directory!

We look forward to hearing you sound like a PRO, with VocoPro, your ultimate choice in Karaoke entertainment.

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 _____

Place 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:

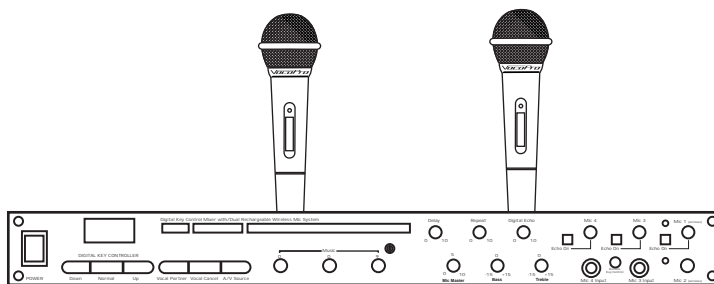
Level	Example
90	Subway, Motorcycle, Truck traffic, Lawn Mower
100	Garbage truck, Chainsaw, Pneumatics drill
120	Rock band concert in front of speakers
140	Gunshot blast, Jet plane
180	Rocket launching pad

-Information courtesy of the Deafness Research Foundation

The DA-2277 Features

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- 110V-220V Switchable



Specifications

Inputs Sensitivity:

MICS 3,4 (Wired) 1.5mV/1K ohms (1/4" Jack/Unbalanced)
 STEREO AUDIO INPUT 50mV/10K ohms (RCA Jack)

Outputs:

AUDIO OUT 1 0.75V/600 ohms (RCA Jack/Unbalanced)
 AUDIO OUT 2 0.75V/600 ohms (RCA Jack/Unbalanced)
 AUDIO OUT 3 0.75V/600 ohms (XLR Jack/Balanced)
 MIC OUTPUT -56mV(1/4"/Unbalanced)
 MAXIMUM OUTPUT +20dBV (8.5Vrms), 0dBV=1V

Tone Controls:

TREBLE (10KHz) ±15dB (STEREO), ±2dB
 BASS (100Hz) ±15dB (STEREO), ±2dB

Signal to Noise Ratio:

MIC >91dB (Below Max.)
 STEREO >97dB (Below Max.)

Total Harmonic Distortion: 0.07% (STEREO)

+0.1% (MIC)

Frequency Response: 0Hz~20KHz ±3dB

Echo: up to 300mS

Key: 9 steps up & down 1 octave

Dimensions: 19" (W) x 9.5" (D) x 3.5" (H)

Net Weight: 10.6 Lbs.

Power Consumption: 10W

RECHARGEABLE VHF WIRELESS MICROPHONE:

Frequency Range:VHF frequency 180 to 250MHz.

Frequency Precision:±0.005% controlled by quartz.

Modulation:FM type

Maximum Deviation:±15KHz

Frequency Response:100Hz to 13KHz

Signal/Noise Ratio:over 80dB

Operation Scope:Radius 166' (in free space)

Muting Type:TONE-Squelch coding lock still sound design

Receiving Sensitivity:10dB/uV

De-emphasis:50uS

Harmonic Interfering Ratio:over 80dB

Before Getting Started: Things to Consider

It is very important to read the following instructions prior to starting any installation procedures. Doing so will ensure a correct installation and may save you some time as well.

Protect Against Power Surges

- Connect all external components before you plug any of their power cords into the wall outlet.
- Turn off the DA-2277 before you connect or disconnect any cables.
- Make sure all cables are properly grounded.

Protect Components from Overheating

- Don't block ventilation holes. Arrange any components so that air can circulate freely.
- Don't stack components.
- If you place the DA-2277 on a stand, make sure you allow adequate ventilation.

Position Cables Properly to Avoid Audio Interference

- Insert each cable firmly into the designated jack.
- If you place components above the DA-2277, route all cables down the side of the back of the DA-2277 instead of straight down the middle of the back of the DA-2277.

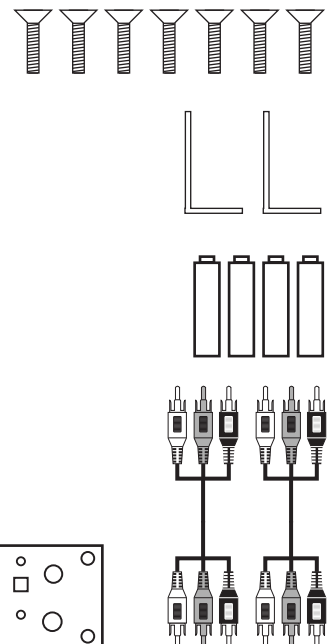
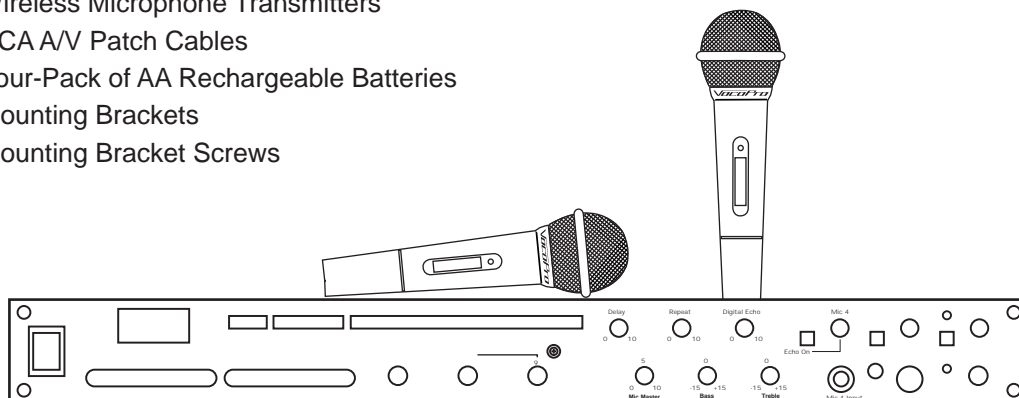
Important Stand and Base Safety Information

Choose the location for your DA-2277 carefully. If the DA-2277 is placed on a stand or base, ensure that it is of adequate size and strength to prevent it from being accidentally tipped over, pushed off, or pulled off. This could cause personal injury and/or damage to the DA-2277.

Unpacking the DA-2277

First carefully unpack all of the box contents. You should have found the following items with your new DA-2277:

- 1 DA-2277 Receiver
- 2 Wireless Microphone Transmitters
- 2 RCA A/V Patch Cables
- 1 Four-Pack of AA Rechargeable Batteries
- 2 Mounting Brackets
- 7 Mounting Bracket Screws



Microphone Basics

Wireless Microphones - The Basics

- Every wireless microphone system must operate on a specific frequency range.
- The government dictates the frequency ranges available for use with consumer wireless devices.
- Wireless frequencies are shared with TV stations, communications equipment and a large number of wireless microphone systems.
- Because of frequency sharing, there is always at least a small chance that someone else in the area might be using the same frequency as your wireless system.
- There must be one transmitter and one receiver to make a complete wireless system, and they both must be on the same frequency.
- If the frequencies of any two wireless systems are too close together, interference is likely, and one or both systems will probably be compromised.
- The practical maximum operating range of a wireless system will vary from as little as 100 feet (30 m) in heavily crowded indoor situations to 150 feet (40 m) in low crowded situation.
- Wireless receivers must have either one or two external antennas, and there should be a clear open-air path between these antennas and the transmitter.
- Weak or worn-out transmitter batteries are a common cause of wireless problems, including complete failure, poor range, distorted audio and interference.

Microphone Position

The DA-2277 wireless microphones are ideal for close-up vocals and can be held in the hand or mounted on a microphone stand. The most common applications and placement techniques are listed below. Keep in mind that microphone technique is largely a matter of personal taste—there is no one "correct" microphone position.

Lead & Backup Vocals

Lips should be less than 3" from or even touching the windscreen on an axis to the microphone. Doing this creates a robust sound, emphasizes bass and provides maximum isolation from other sources.

Speech

When giving a speech or simply speaking, place the microphone 4" to 10" away from the mouth, just above nose height for a natural sound with reduced bass. You can also place the microphone 8" to 16" away from the mouth, slightly off to one side, for a more "distant" sound with highly reduced bass and minimal "s" sounds.

Proximity Effect

When the sound source is less than 1/4 in. from the microphone, the microphone boosts bass frequencies (by 6 to 10 dB at 100 Hz), creating a warmer and richer bass sound than when farther away. This effect, known as proximity effect, happens only in unidirectional dynamic microphones like those used with the DA-2277.

Microphone Basics

Avoiding Feedback

Acoustic feedback can be a problem in any sound system. Audio systems that include wireless microphones are somewhat more prone to feedback than those using only wired microphones, simply because the freedom of movement with wireless makes it more likely that the user will walk in front of the speakers. Take steps to make it less likely that the wireless user will walk in front of the speakers. These steps can include more rehearsal time, markings on the floor, relocation of the speakers and several other options.

More Tips to Avoid Interference

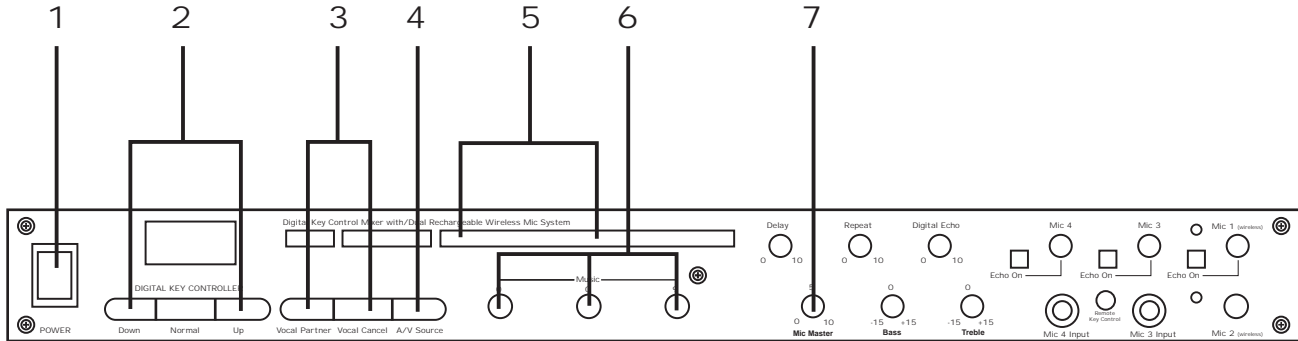
- Lower the sound level of the speakers nearest the wireless user and increase the level of other speakers to compensate. If possible, rotate the nearest speakers to point them slightly away from the wireless user.
- Make certain that the transmitter gain is set appropriately for your application. If the transmitter gain is set too high, it may cause overloading of the wireless circuits and increase the chances of feedback.
- Most standard techniques for reducing feedback will also work with wireless microphones. Because of the increased chance of feedback with wireless, understanding and being able to apply these techniques will be helpful.
- Request that the talker speak louder into the microphone so microphone levels can be reduced.
- Reduce the distance from the talker to the microphone.
- Reduce the number of open microphones. Each time this number is halved, the sound system output can be increased by 3dB.
- Move the loudspeaker farther away from the microphone.
- Move the loudspeaker closer to the listener.
- Use an equalizer/feedback reducer to cut the frequency bands in which the feedback occurs.

DA-2277 & Stage Monitors/P.A. System

- Place the stage monitor directly behind the microphone.
- Locate the P.A. loudspeakers so that they point away from the rear of the microphone.
(With the speakers located in these positions, the possibility of feedback is greatly reduced).
- Always check the stage setup before a performance to ensure optimum placement of microphone and monitors.

IMPORTANT: Every wireless microphone installation is a unique situation, and can present a variety of problems. Never attempt a live performance without first conducting a "walk through" test of the system in the performing area. If major changes (additional wireless systems or intercoms, relocation of scenery, etc.) have been made since the last walk-through test, check the wireless system again—as close to performance time as possible.

Front Panel Descriptions and Controls



1. POWER button – This button turns the DA-2277's power ON/OFF.

2. DOWN, NORMAL AND UP buttons – These buttons adjust how the DIGITAL KEY CONTROLLER transposes the musical key of your source music. The DOWN button lowers the MUSICAL KEY a half step each time it is pressed. The NORMAL key resets the MUSICAL KEY back to its original key and the UP button raises the MUSICAL KEY a half step each time it is pressed.

3. VOCAL CANCEL AND VOCAL PARTNER buttons – These buttons activate the MULTIPLEX audio playback modes that are used to cancel out the guide vocals from multiplexed karaoke media. During playback of a multiplexed track, press the VOCAL CANCEL button once to remove the guide vocals. Press the VOCAL CANCEL button a second time to have the guide vocals return to playback. VOCAL PARTNER also cancels out the guide vocals from multiplexed karaoke media, however the guide vocals are only removed as long as you are singing into the microphone. When you stop singing into the microphone, the guide vocals are reintroduced automatically. Press the VOCAL PARTNER once to initialize the feature, and press a second time to disable the feature.

NOTE: Attempting to utilize this feature with a non-multiplexed track will not work as this feature is designed to work with multiplexed tracks only.

4. A/V SOURCE button – This button toggles input between devices that may be connected to the CDG and DVD A/V channels. For input from the CDG channel, press the A/V SOURCE button once. For input from the DVD channel, press the A/V SOURCE button a second time.

5. LEVEL meters – These LED meters display the overall output level from both the A/V SOURCE and MICROPHONE channels. When there is red LED activity, the output level is in or nearing a distorted level and should be monitored carefully if not reduced.

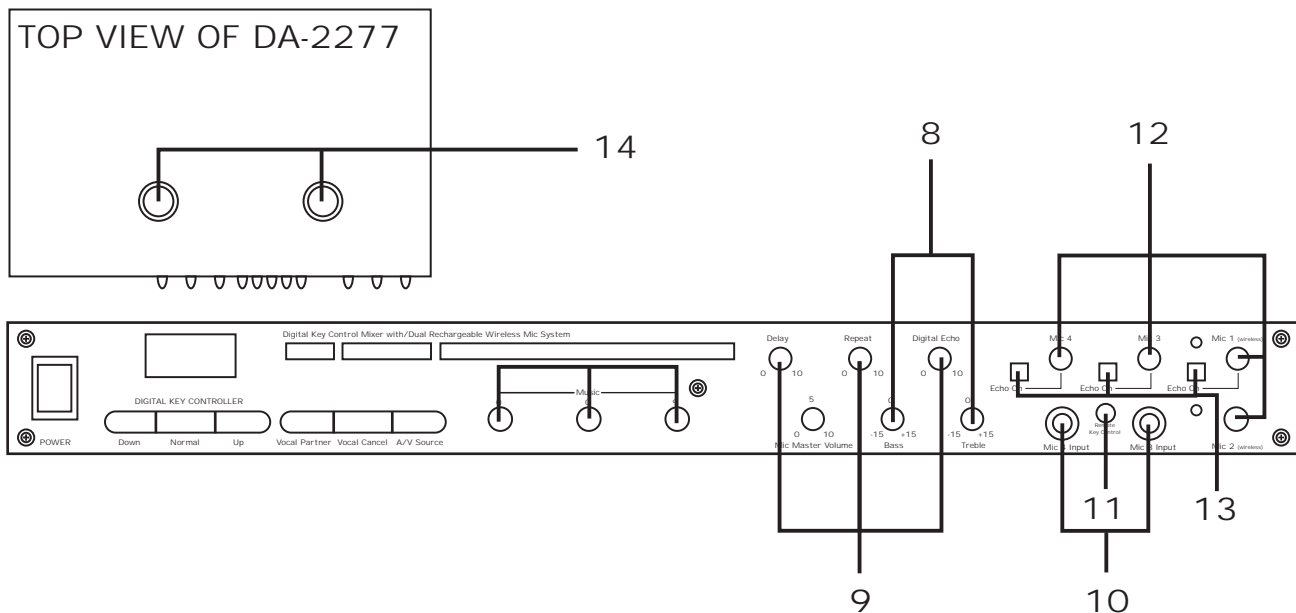
6. MUSIC BASS, TREBLE AND MASTER controls – These controls adjust the BASS, TREBLE and MASTER VOLUME levels for your source music. The BASS and TREBLE controls adjust the low and high frequency levels for your source music, while the MASTER control adjusts the overall volume level of your source music.

NOTE: Microphone output is not affected by adjustments made to these controls.

7. MIC MASTER control – The MIC MASTER control adjusts the overall volume of all microphone output.

NOTE: If you need to adjust the volume level of just one MIC channel in particular, use that MIC's individual volume level control instead of the MIC MASTER control.

Front/Top Panel Descriptions and Controls

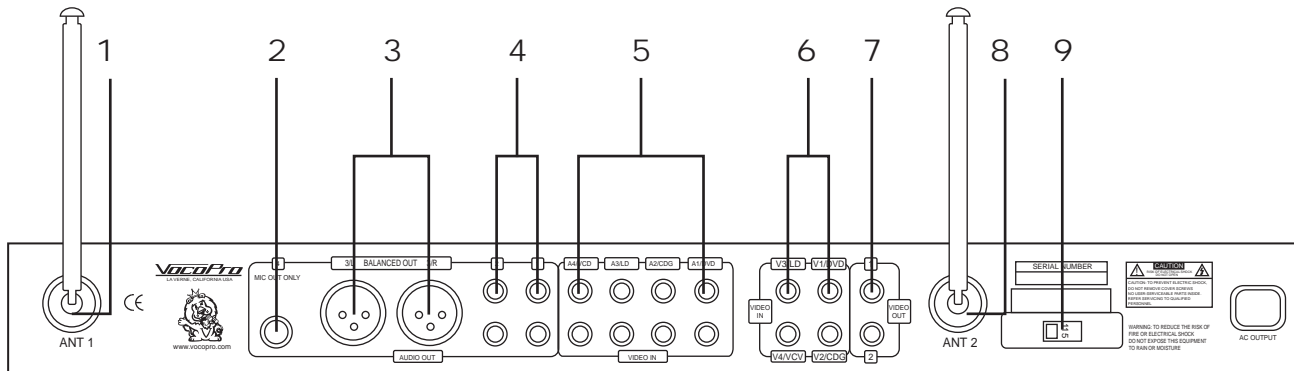


- 8. MIC BASS AND TREBLE controls** – These controls adjust the low and high frequency levels for all microphone output. turn clockwise to increase and counter- clockwise to decrease.
- 9. DIGITAL ECHO, REPEAT AND DELAY controls** –The DIGITAL ECHO, REPEAT and DELAY controls adjust the DA-2277's processing of DIGITAL ECHO. The DIGITAL ECHO, DELAY and REPEAT knobs will alter the levels of effects on all 3 Mic channels simultaneously. The DIGITAL ECHO knob controls the overall echo applied to the 3 Mic channels, the DELAY knob controls the interval time between each echo and the REPEAT knob controls the # of times the echo will repeat. For all 3 effects knobs, turn clockwise to increase and counter- clockwise to decrease.
- 10. MIC 3 AND 4 jacks**- These 1/4 inch input jacks are for connecting microphones or instruments.
- 11. REMOTE KEY CONTROL jack** – This jack is for connecting the 1/8" plug found on a key controllable microphone. After plugging the in the microphone, you can control the DIGITAL KEY CONTROLLER with the key controls located on the microphone.
- 12. MIC 1, 2, 3 AND 4 LEVEL controls** –These knobs control the MIC CHANNELS output levels individually. This makes it possible to adjust just one Mic channel without affecting the other 3 channels. This can be useful when one person or (Mic channel) might be overpowering others in a duo or trio. Turn clockwise to increase output levels, and counter-clockwise to decrease output levels.
- 13. DIGITAL ECHO ON/OFF button** – Microphone channels 1, 3 and 4 have one of these buttons. By pressing it, you activate the DIGITAL ECHO for that channel. By depressing it, you remove the DIGITAL ECHO from that channel.

NOTE: Microphone channel 2 does not have an ECHO ON/OFF switch as that channel is used as a "dry" (no echo) microphone channel.

- 14. MICROPHONE CHARGING terminals** – These terminals are for charging the microphones when they are not in use. Place microphone in the terminal and twist it clockwise till it "clicks" into position.

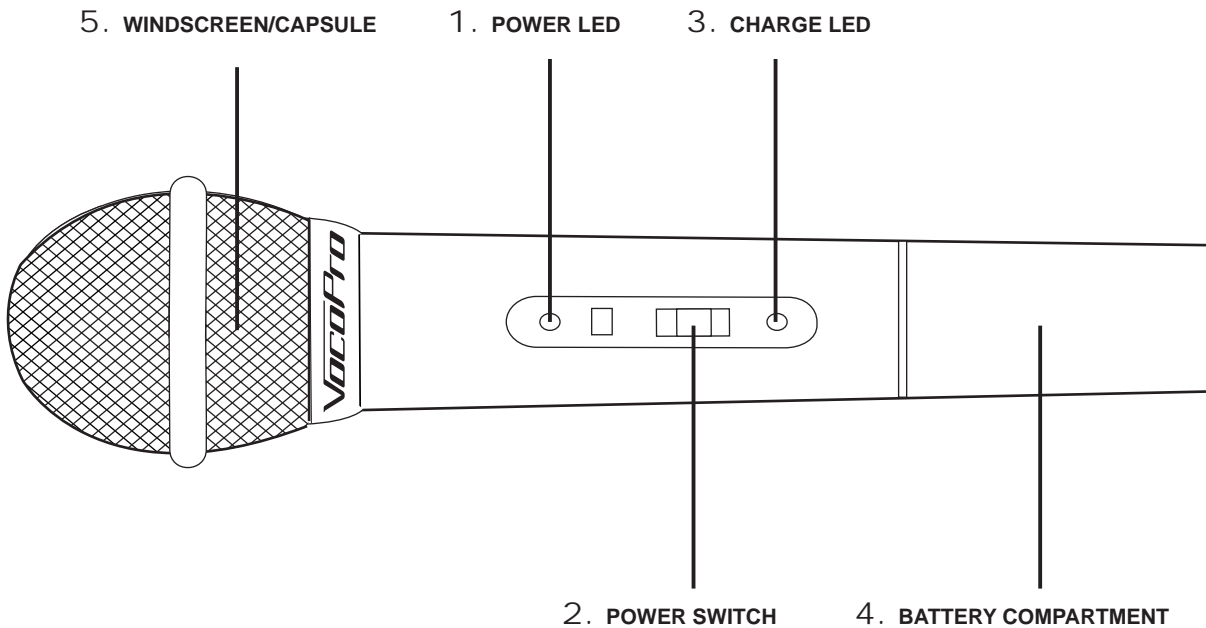
Rear Panel Descriptions and Controls



1. **ANTENNA 1 jack** – Connect a RECEIVER ANTENNA to this jack before attempting to use this device. Ensure the ANTENNA is fully extended for optimal signal reception.
2. **MIC OUT jack (1/4")** – This jack provides an AUDIO OUT connection of MICROPHONE OUTPUT only for vocal specific applications (vocal effects). No A/V source music will output from this jack. Connect a 1/4" audio patch cable from this jack to the AUDIO IN jacks on your external device.
3. **AUDIO OUT jacks (XLR)** – These jacks are for connecting balanced AUDIO OUTPUT from the DA-2277 to external amplifiers, mixers or recording devices. Connect a pair of XLR cables from these jacks to the AUDIO IN jacks on your external amplifier, mixer or recording device.
4. **AUDIO OUT 1 AND 2 jacks (RCA)** – These jacks are for connecting unbalanced AUDIO OUTPUT from the DA-2277 to external amplifiers, mixers or recording devices. Connect a paired RCA patch cable from these jacks to the AUDIO IN jacks on your external amplifier, mixer or recording device. Up to 2 devices can be connected to these AUDIO OUT jacks.
5. **A/V AUDIO IN jacks (RCA)** – These jacks are for connecting AUDIO from your A/V source players. Connect a paired RCA patch cable from these jacks to the AUDIO OUT jacks on your A/V source player. Up to 4 A/V source players can be connected.
6. **VIDEO IN jacks (RCA)** – These jacks are for connecting VIDEO from your A/V source players. Connect an RCA patch cable from these jacks to the VIDEO OUT jacks on your A/V source players. Ensure that the VIDEO IN jacks correspond with the player connected to the AUDIO IN jacks.
7. **VIDEO OUT jacks (RCA)** – These jacks route the VIDEO signals from the DA-2277 to your TV or display devices. Connect an RCA patch cable from these jacks to the VIDEO IN jack on your TV or display device. Up to 2 display devices can be connected to these jacks.
8. **ANTENNA 2 jack** – Connect a RECEIVER ANTENNA to this jack before attempting to use this device. Ensure the ANTENNA is fully extended for optimal signal reception.
9. **VOLTAGE selector** – Selects between 115V and 230V power supply settings. Select 110V for North American based power requirements and 230V for European based power requirements.

NOTE: It is imperative that this setting is set correctly before powering on your DA-2277.

Microphone Descriptions and Functions

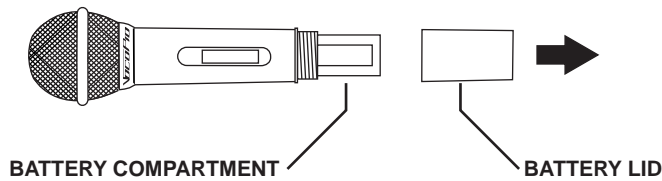


- 1. POWER LED indicator** – This LED lights up when the microphone is turned on and in use.
- 2. POWER switch** – This switch turns the microphone ON/OFF.
- 3. CHARGE LED indicator** – This LED lights up when the microphone is being charged.
- 4. BATTERY compartment** – This is where you insert the microphone batteries.
- 5. WINDSCREEN/CAPSULE** – The WINDSCREEN houses and protects the MICROPHONE CAPSULE.
Remove the windscreen by twisting it counter-clockwise.

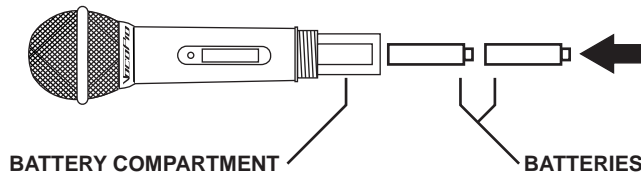
Replacing/Recharging the Microphone Batteries

Replacing Microphone Batteries

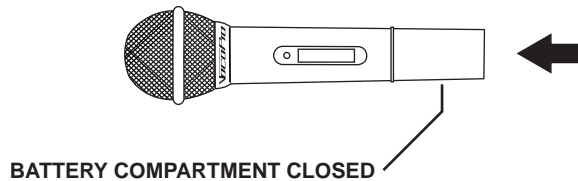
- Unscrew the BATTERY COMPARTMENT cap by twisting it counter-clockwise.



- Insert 2 new RECHARGEABLE AA batteries into the BATTERY COMPARTMENT with the polarities matched as shown in the diagram located in the compartment.



- Replace and retighten the BATTERY COMPARTMENT cap by twisting it clockwise.

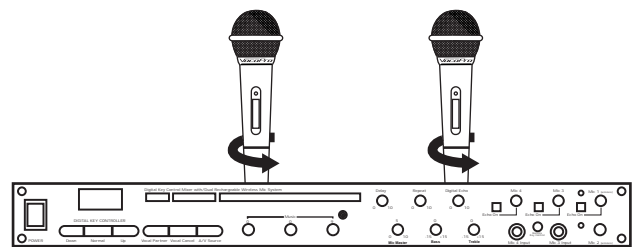


NOTE: The microphones will operate on regular non-rechargeable batteries, however when using regular batteries, DO NOT PLACE THE MICROPHONE IN THE RECHARGING TERMINAL, as that could cause the batteries to explode.

Recharging Your Microphones

Turn the MICROPHONE to the OFF position.

Insert the MICROPHONE into the RECHARGING TERMINAL and carefully turn it till you hear it "lock" in place. At that time, make sure the CHARGING LED indicator is illuminated. When the microphone is fully recharged, the CHARGING LED indicator will no longer be illuminated. In case you need to end the recharging of a microphone manually, carefully turn the microphone till the CHARGING LED indicator is no longer illuminated.



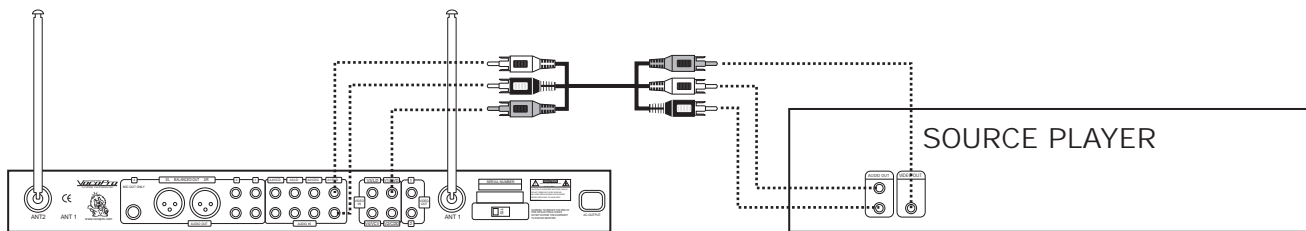
NOTE: To maintain long-life use from a rechargeable battery, do not recharge for more than 8 hours or allow to recharge after the CHARGING LED indicator is no longer illuminated.

Getting Connected

Connecting A/V Source Players to the DA-2277

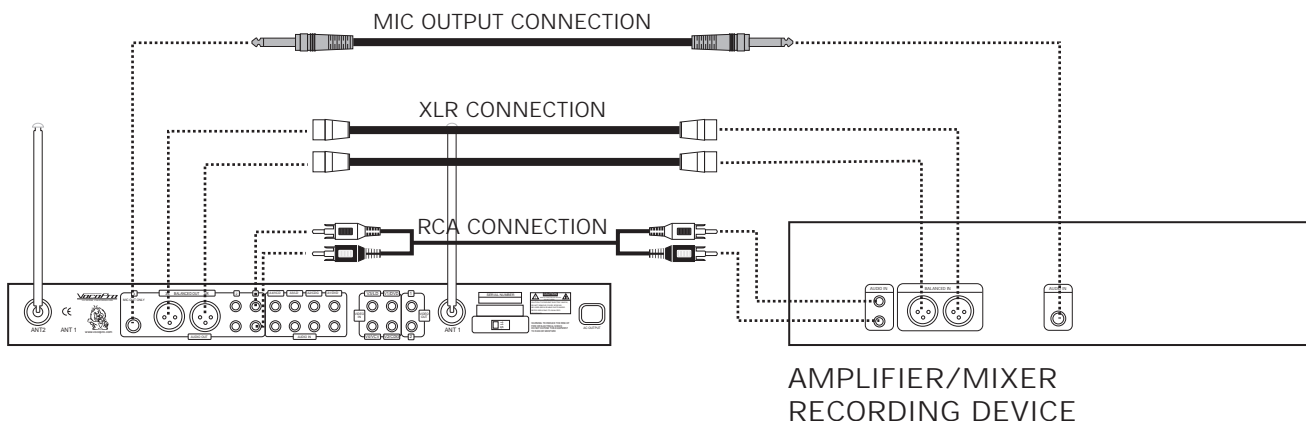
For each A/V source player, you will need an A/V patch cable (red, white and yellow plugs).

- Connect one set of red and white plugs to the AUDIO OUT jacks on your source player and the yellow plug to the VIDEO OUT jack on your source player.
- Connect the other set of red and white plugs to an AUDIO IN jacks of your choice (VCD, LD, CDG, DVD) on the DA-2277 and connect the yellow plug to the VIDEO IN jack corresponding to the same channel you connected the audio to.



Connecting Audio Output to External Amplifiers, Mixers or Recording Devices

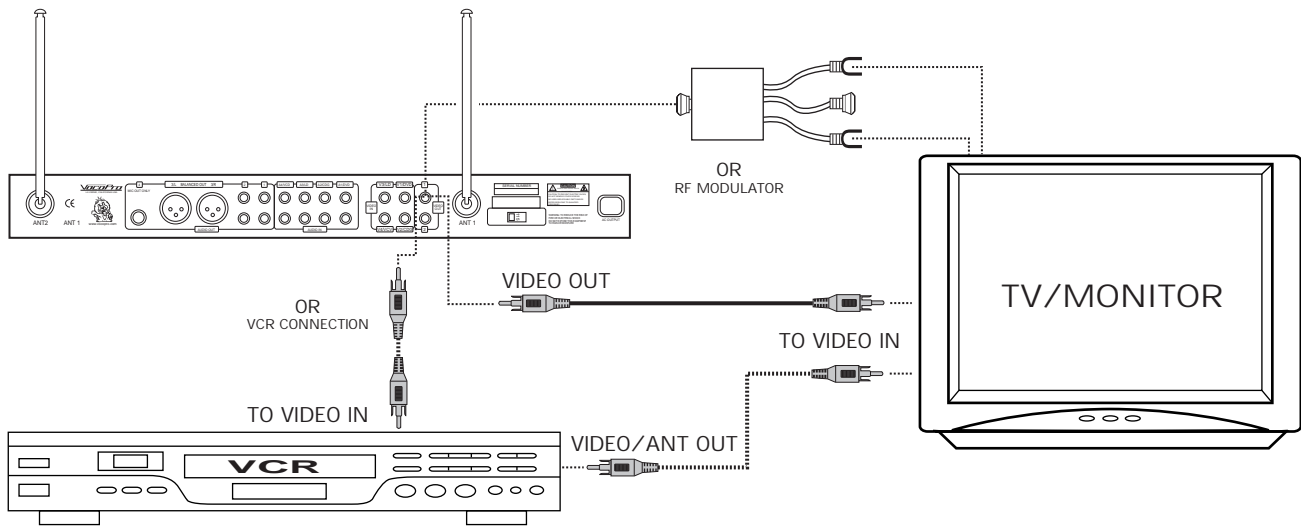
- For AUDIO OUTPUT connections, there are 4 possible connections that can be made simultaneously: unbalanced RCA (x2), balanced XLR (x1) and isolated microphone 1/4" (x1).
- For each unbalanced RCA AUDIO OUTPUT connection, connect a paired RCA patch cable from the AUDIO IN, LINE IN or CH. A-B jacks on your external devices to the AUDIO OUT jacks (1) or (2) on the DA-2277.
- For a balanced AUDIO OUTPUT connection, connect XLR audio cables from the AUDIO IN, LINE IN or CH. A-B jacks on your external device to the AUDIO OUT jacks (3/L-3/R) on the DA-2277.
- For an isolated MICROPHONE OUTPUT connection, connect a 1/4" audio patch cable from the AUDIO IN or LINE IN jacks on your external device to the (4) MIC ONLY –56dBv jack on the DA-2277.



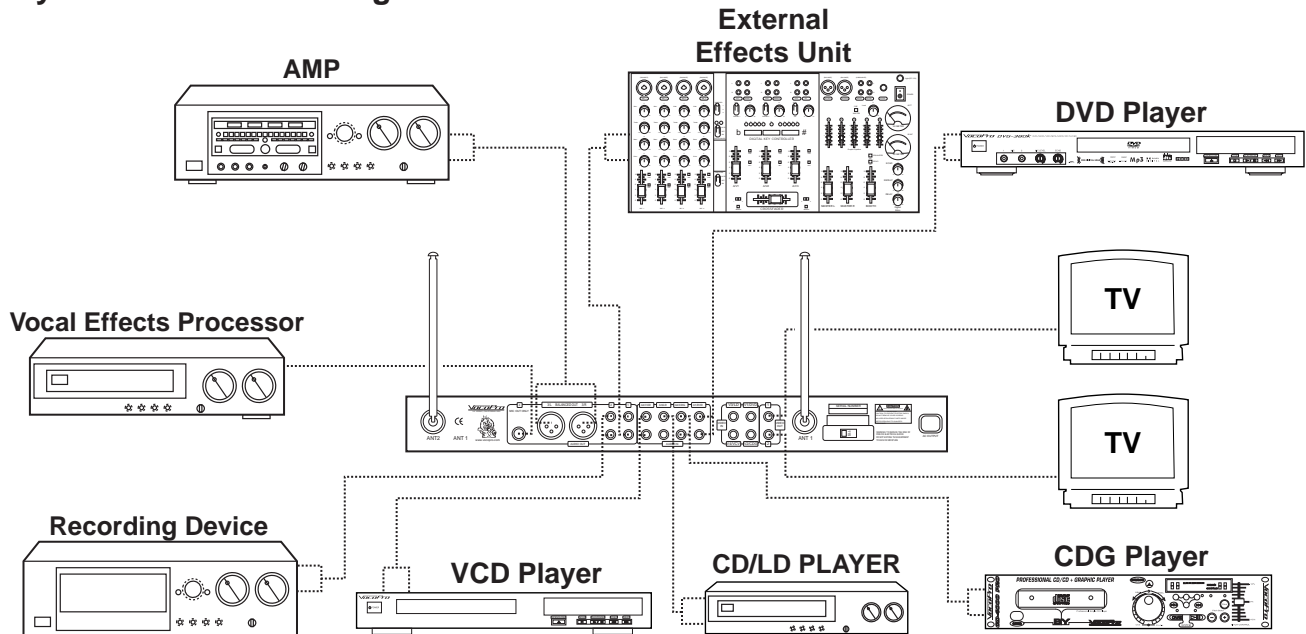
Getting Connected

Connecting Video to Display Devices

- For each VIDEO OUT connection, connect a single RCA patch cable from the VIDEO IN jack on your display device to the VIDEO OUT (1 or 2) jack on the DA-2277.
- If the TV does not have a VIDEO INPUT jack you may connect that end of the cable to the VIDEO INPUT of a VCR and connect the RF OUTPUT of the VCR to the TV ANTENNA INPUT jack.
- If there is no VCR present, you will need to use an RF Modulator. To obtain an RF Modulator, check with your VocoPro dealer. An RF Modulator can also be purchased from Radio Shack™.



System Connection Diagram



Understanding and Avoiding VHF Interference

Recognizing Interference

The ways of recognizing the type of interference present are observing the receiver LED indications and carefully listening to the audio. A set of headphones can be a useful tool in isolating and analyzing interference problems. With headphones it is easier to listen to one wireless channel at a time, even when the system is in use.

Below are some interference descriptions. Most likely there is one that matches the symptoms that you are experiencing.

- If there is interference when the microphones are off, and noise/distortion is present from the receiver output when the microphones are on, try turning off all other wireless microphones.
If the interference problem is still present, there might be a direct radio interference problem.
Direct interference is a serious problem that must be corrected in order for the wireless system to be fully usable.
- Interference in the form of low level-audio tones, whines, whining sounds whose pitch changes rapidly, or audible voices or music (distorted or not) is likely to be caused by intermodulation, non-wireless interference or direct interference.
- If there is interference when the receiver is turned on, in the form of buzzy or raspy whines with a distinct cadence or rhythm that differs from time to time, digital interference might be the problem.
Common sources include computers, digital delays, effects processors, lighting controllers, and other digital equipment using microprocessors and digital signal processors (DSPs).
- If there is no interference when the receiver is turned off and irregular popping, cracking or buzzing noises on the audio with the receiver on, there may be electrical interference problems. This kind of interference is usually caused by electric motors, neon lights, lighting equipment, appliances and other types of electrical equipment. Electrical interference will generally affect all wireless systems at a location, not just one system.
- Certain types of buzzing sounds are actually due to interference from TV stations. If the buzzing sound changes substantially at more or less random intervals and does not seem to be caused by electrical equipment, the problem may be TV interference.
- Interference that takes the form of bursts of static or short bursts of noise is likely to be caused by lightning, intermittent arcing or defective electrical machinery. This type of random interference is pretty rare but can be among the most difficult to resolve.

Understanding and Avoiding VHF Interference

Avoiding Basic Problems

Sometimes interference problems have very basic causes. To avoid wasting time on an easily correctable problem, check the following items before proceeding:

- Make certain than no radio transmitters are allowed to come closer than approximately 10 to 15 feet of the wireless receiver antennas. This can overload the receiver and increase the chances of interference.
- Make certain not to allow receiver antennas to touch each other when arranging them.
Be sure that the antennas from one receiver do not touch, or come too close to, those of another receiver. Try to provide at least 10 inches of separation between the antennas of any two receivers.
- Make sure that all microphones have charged batteries. The low output voltage of weak batteries can cause some microphones to generate harmful interference. If there is any doubt, install fresh batteries in all microphones.
- Make sure that the wireless frequencies are not on a local TV channel.
- Check the wireless frequencies in use to make sure that no two systems are on the same frequency.
- Check to make sure that no two wireless frequencies are too close together. In general, 1 MHz is the recommended minimum spacing between systems.
- If a considerable number of systems will be used, operating conditions will be difficult or interference is likely, if possible avoid these situations.
- Before using a system in a new location or another city, double-check for new problems. Small changes in conditions can cause interference where none was present before.
- Turn off unnecessary electronic equipment, especially computers and digital devices. These are a relatively common cause of wireless interference.
- If use of computers or digital devices is necessary, keep them at least 18 inches (45 cm) away from the microphones and receiver antennas.

Understanding and Avoiding VHF Interference

Frequency Conflicts

There are two primary ways that other wireless systems and TV channels cause interference. The first is a direct frequency conflict. If two wireless systems are on the same frequency, usually neither system will be usable unless the other is turned off. This problem is more common than might be expected, especially when all the equipment is the same type. This is because most systems have only a limited number of standard frequencies. It should be remembered that the other systems could be some distance away - in another house of worship down the street, in another nearby studio, or at another club in the vicinity.

TV transmitters can also be a powerful source of direct interference if the wireless frequency falls within the assigned channel of a local TV station. This problem sometimes occurs because wireless frequencies are listed in MHz and it is not always obvious within which TV channel a particular frequency falls. For reference, below is TV frequency information.

TV Channel Frequency Data VHF TV Channels

Channel Number	Frequency Range (MHz)	Picture Carrier Frequency (MHz)	Color Sub carrier Frequency (MHz)	Sound Sub carrier Frequency (MHz)
7	174-180	175.250	178.8295	179.750
8	180-186	181.250	184.8295	185.750
9	186-192	187.250	190.8295	191.750
10	192-198	193.250	196.8295	197.750
11	198-204	199.250	202.8295	203.750
12	204-210	205.250	208.8295	209.750
13	210-216	211.250	214.8295	215.750

NOTE: The low VHF TV channels (2 through 6) are not used for wireless microphones and do not need to be considered

Troubleshooting

PROBLEMS	CAUSE	SOLUTIONS
Battery is running low even when just charged.	The microphone is not recharging because it is not placed in the recharging terminal correctly.	Reinsert the microphone into the recharging terminal and gently turn it till the CHARGING LED indicator is illuminated.
	Battery is not fully recharged after 8 hours of recharging due to it being too old.	Replace with new rechargeable batteries.
No sound output.	Microphone output is low.	Turn up the output level for each microphone channel. Adjust the output level selector for each microphone to high.
	Master volume is turned to minimum.	Turn up the master volume
	External devices not functioning.	Inspect and replace external devices if they are not functioning correctly.
	Red LED is lit on the microphone	Place microphone in a recharging station till recharged.
Excessive noise in microphone output.	Batteries/charge are low.	Replace batteries Recharge microphone batteries or replace with new batteries.
	Antennas are not receiving microphone signals optimally.	Extend the antennas to their outer most positions.
	The microphones are out of the DA-2277's operating range.	Move closer to the receiver till you are in operating range.
No music output.	The A/V source selector is set to the wrong operating channel.	Set the A/V source selector to the current active A/V source.
	The master volume is set to a minimum	Turn up the master volume.
	The A/V cables are not connected properly.	Reconnect A/V cables correctly and firmly making good contact.
No echo is being applied to the vocals	The echo on/off button for the microphone channels are set to off.	Set the echo on/off buttons to ON.

Glossary of Terms

Digital Echo - Digital echo is a synthetically processed sound effect that mimics natural echo. Echo in general is the "bouncing" of waves back and forth between 2 surfaces. This effect gives a spacious or ambient feeling that works great with vocals.

Repeat - Repeat is facet of the echo process. Repeat refers to the frequency of echoes within a period of time.

Delay - Delay is also a facet of the echo process. Delay refers to the amount of time that exists between echoes.

Vocal Cancel - Vocal Cancel is a feature that removes vocals from multiplex CD tracks. To be multiplexed, a disc must have the vocals coded to the right channel and the music coded to the left channel. When you select Vocal Cancel, the unit will remove the right channel (vocals) and split the left channel (music) to both sides.

Vocal Partner - Vocal Partner is a feature that removes vocals from multiplex CD tracks much in the same way as Vocal Cancel, but with an added "auto-pilot" function. The main difference is that Vocal Partner will only remove vocals as long as there is activity going through the microphone (singing). When you stop singing, the vocals automatically return.

Vocal Reducer - Vocal Reducer is a feature that removes vocals from standard non-multiplex CD tracks. To do this, the unit compares the audio on the left and right channels, and cancels out any signals that appear on both. Most currently recorded CD's contain the vocal layer on both sides, however some may not, leading to varying results.

CD+G or CDG - A CD+G is a specially formatted disc that has an additional line of sub-code on the CD that is responsible for the lyrics that play on video screen for Karaoke systems. CD+G stands for Compact Disc + Graphics.

Sub-Code - Sub-code is specially coded area of data used by CD+G manufacturers to produce lyrics for Karaoke video output.

Multiplex (MPX) - Multiplex is a type of Karaoke software that has specially formatted left and right channels to make multiplex features available. To be formatted for multiplex use, a disc must have the vocals coded to the right channel and the music to the left channel. When you select a multiplex mode, the unit will remove the right channel (vocals) and split the left channel (music) to both sides.

Rack Mountable - Rack Mountable refers to the ability to place unit into professional or travel rack cases. Such cases are great for building complete systems and protect them during transportation. The standard rack size for MOST cases is 19".

VCD - VCD is a disc formatted in MPEG-1. These discs are good candidates for Karaoke use as they have an audio and a video layer to them. VCD stands for Video Compact Disc.

Glossary of Terms

A/V - A/V is an abbreviation for Audio/Visual.

Y-Adapter - Any type of connection that splits a signal into two parts. An example would be a connector with one male RCA jack on one end, and two female RCA jacks on the other end.

Woofers - A speaker, (driver), used for low-frequency reproduction. Usually larger and heavier than a midrange or tweeter.

Midrange - A speaker, (driver), used to reproduce the middle range of frequencies. A midrange is combined with a woofer for low frequencies and a tweeter for high frequencies to form a complete, full-range system.

Tweeter - A speaker, (driver), used to reproduce the higher range of frequencies. To form a full-range system, a tweeter needs to be combined with a woofer, (2-way system), or a woofer and midrange, (3-way system).

Pre-Amplifier - Or Pre-amp is a device that takes a source signal, such as from a turntable, tape-deck or CD player, and passes this signal on to a power-amplifier(s). The pre-amp may have a number of controls such as source selector switches, balance, volume and possibly tone-controls.

Out of Phase - When speakers are mounted in reverse polarity, i.e., one speaker is wired +/+ and -/- from the amp and the other is wired +/- and -/+. Bass response will be very thin due to cancellation.

Line Level - CD players, VCRs, Laser disc Players etc., are connected in a system at line level, usually with shielded RCA type interconnects. Line level is before power amplification. In a system with separate pre-amp and power-amp the pre-amp output is line level. Many surround sound decoders and receivers have line level outputs as well.

Frequency - The range of human hearing is commonly given as 20-20,000Hz (20Hz-20kHz). One hertz (Hz) represents one cycle per second, 20Hz represents 20 cycles per second and so on. Lower numbers are lower frequencies

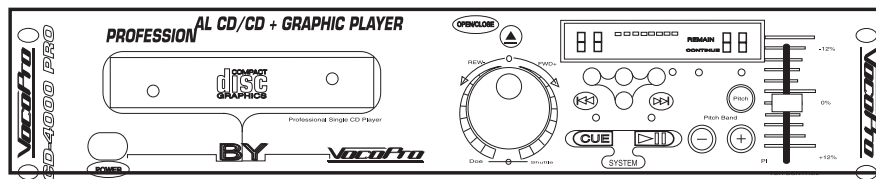
Gain - To increase in level. The function of a volume control.

Decibel (dB) - Named after Alexander Graham Bell. We perceive differences in volume level in a logarithmic manner. Our ears become less sensitive to sound as its intensity increases. Decibels are a logarithmic scale of relative loudness. A difference of about 1 dB is the minimum perceptible change in volume, 3 dB is a moderate change in volume, and about 10 dB is an apparent doubling of volume. 0 dB is the threshold of hearing and 130 dB is the threshold of pain.

Clipping - Refers to a type of distortion that occurs when an amplifier is driven into an overload condition. Usually the "clipped" waveform contains an excess of high-frequency energy. The sound becomes hard and edgy. Hard clipping is the most frequent cause of "burned out" tweeters. Even a low-powered amplifier or receiver driven into clipping can damage tweeters which would otherwise last virtually forever.

Recommended VocoPro Gear

CDG-4000 PRO

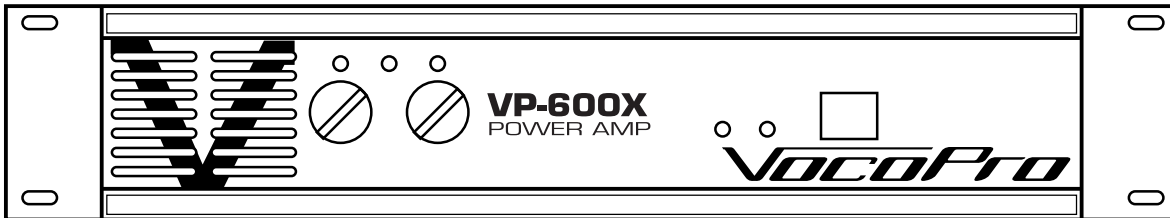


Professional CD/CD+ Graphic Player

- Pro CD Player W/ CD + Graphics Decoder
 - Pitch Control To 12% (+) Or (-)
- Scramble protection during pitch changes
 - Single Track Mode
 - Frame Search W/ Jog Dial
- 4-Speed Fast Forward/Rewind Shuttle.
 - Pitch Slider, Pitch Bend and Jog Dial
- BPM (Beat Per Minute) Synchronization
 - Cue Detect Function
- Professional 19" Rack Mount Chassis
 - Switchable 110-240V
 - NTSC/PAL
- Dimensions: 19" W X 3 1/2" H X 10" D
 - Shipping Weight: 9.35 Lbs.

Recommended VocoPro Gear

VP-600X

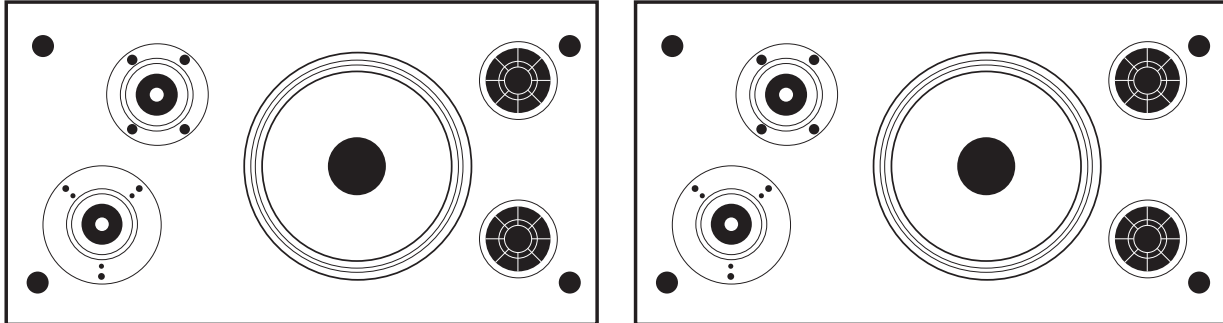


2 Space 600W Professional Power Amplifier

- 300W + 300W RMS
- 600W + 600W Max
 - THD: 0.05%
- Frequency Response: 20HZ-20KHZ Signal to Noise
 - 1/4" or XLR Inputs
- Input Ratio: Less than 100DB
 - Input Sensitivity: 1.23V
- Dimension: W x D x H (19" x 13" x 1.5")
 - Shipping Weight: 47 Lbs

Recommended VocoPro Gear

SV-420



Professional 8" 3 Way Vocal Speakers

- 3 Way 8" Karaoke Vocal Speakers (Sold in Pair)
 - Design for Karaoke Studio or Singers Monitor
 - Power Rating: 180 Watts Peak / 90 Watts RMS
 - Metal Grill
 - Impedance: 8 OHM
 - Sensitivity: 92 DB
 - Frequency Response: 20HZ-20KHZ
- Dimensions H x W x D: 19" x 12" x 11.25" (each)
 - Shipping Weight: 50 Lbs. (pair)
- (Dimensional Weight: 60 Lbs. Due to Oversize)

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