

# **Sound Acoustics**

Premium Residential & Commercial Audio/Video Products

**C-540 , C-8120 and C-8240  
Commercial Mixer/Amplifiers**

**Owner's Manual**

**IMPORTANT NOTE:** THIS OWNER'S MANUAL IS PROVIDED AS AN INSTALLATION AND OPERATING AID. SOUND ACOUSTICS DOES NOT ASSUME ANY RESPONSIBILITY AS TO ITS ACCURACY AND SHALL NOT BE LIABLE IN TORT OR CONTRACT FOR ANY DIRECT, CONSEQUENTIAL OR INCIDENTAL LOSS OR DAMAGE ARISING FROM THE INSTALLATION, USE OR INABILITY TO USE THIS PRODUCT.

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS APPLIANCE TO WATER, RAIN OR MOISTURE.

**CAUTION:** TO PREVENT ELECTRIC SHOCK, DO NOT OPEN.

Immediately upon receipt, inspect the unit and shipping container for indications of improper handling or in-transit damage. This equipment was carefully inspected and tested before leaving the factory. Notify the Transportation Company, Wholesaler or Retailer immediately if any damage is found. Be sure to save the carton and packing material as evidence of damage for later inspection. DO NOT SHIP the unit back to the factory unless authorized to do so by the factory. IN TRANSIT DAMAGES ARE NOT COVERED BY THE WARRANTY. **DO NOT INSTALL OR ATTEMPT TO OPERATE THIS UNIT IF IT HAS BEEN DAMAGED.**

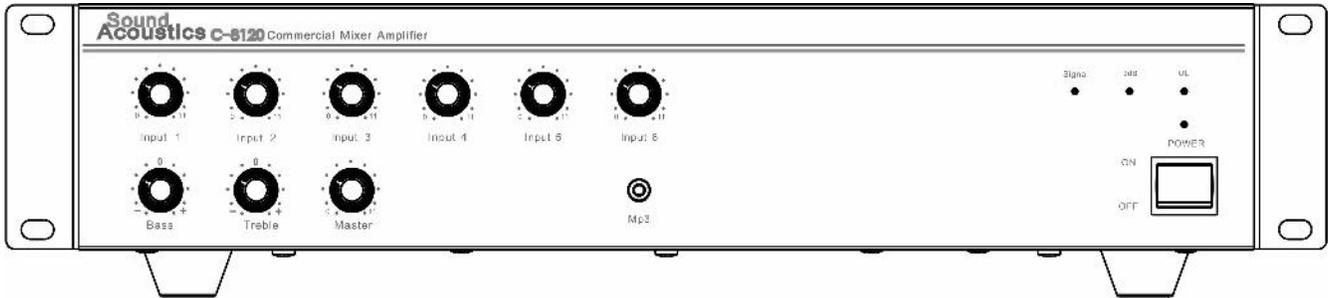
## **IMPORTANT SAFETY INSTRUCTIONS**

- Read and keep these instructions.
- Heed all warnings and follow all instructions contained within this manual.
- Do not use this unit 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 when the 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.
- Operate the product only with the voltage specified on the unit. Fire and/or electric shock may result if a higher voltage is used.
- Do not modify, kink, or cut the power cord. Do not place the power cord in close proximity to heaters and do not place heavy objects on the power cord and/or the product itself, doing so may result in fire or electrical shock.
- Replace the protective cover over the speaker terminals after installation. Do not touch the 70V speaker terminals as electric shock may result.
- Ensure that the safety ground terminal is connected to a proper ground. Never connect the ground to a gas pipe, as a severe explosion and/or fire may result.
- Be sure the installation of this product is stable, avoid slanted surfaces as the product may fall and cause injury, property damage, electrocution and/or fire.

## Introduction

Congratulations and thank you for purchasing a Sound Acoustics product. The Sound Acoustics "C" series amplifiers are designed and built to provide ultra reliable performance for professional background music and paging applications. All Sound Acoustics amplifiers feature color coded inputs and outputs, ultra low noise components, front panel auxiliary inputs and PRO-RVC remote control inputs. Sound Acoustics inputs are very flexible and will accept practically any source and source level. This frees the installer to design the system to suit the customers needs exactly. Please read this entire manual to get the most from your Sound Acoustics product.

## Front Panel Operation and Connections



**Inputs 1-5 (Inputs 1-2 C-540)** - These control the level of each channel in the overall mix. A good level to start off with is the 12:00 position then adjust as needed.

**Input 6 (Input 3 C-540)** - This input controls the level of input 6 (input 3 C-540) in the overall mix. This also controls the level of the front panel Mp3 input. NOTE: Input 6 (input 3 C-540) also feeds the Music On Hold "MOH" output which will be explained in detail on page \_\_\_\_\_ later in this manual.

**Bass** - The bass control is a shelving type equalizer that boosts or cuts bass frequencies at 100Hz +/- 12 dB. The center "0" position does not affect the signal. Equalizers should be used sparingly. Too much boost can cause feedback when using microphones.

**Treble** - The Treble control is a shelving type equalizer that boosts or cuts bass frequencies at 10kHz +/- 12 dB. The center "0" position does not affect the signal. Equalizers should be used sparingly. Too much boost can cause feedback when using microphones.

**Master** - The Master gain control controls the overall output of the amplifier. Pay close attention to the output LED's. Signal, -3dB and OL. The LED's monitor the output level and provide visual feedback. It is common to have the signal and -3dB LED's lit. When the OL "RED" LED is lit or flashing the amplifier is being overloaded. Immediately turn down the Master volume control. Re-adjust Input level controls 1-6 to the desired mix and then adjust the Master level control to the desired volume.

**NOTE:** When using the PRO-RVC remote control, set the amplifier master volume to 75% then control the master volume remotely from the PRO-RVC.

**Power** - The Power switch applies power to the amplifier. The Power switch is also part of the protection circuitry of the amplifier. If the amplifier is overloaded it will automatically shut down to protect the circuitry from damage. If this occurs turn the power switch off, turn the master volume down, wait 15 seconds, then turn the Power switch on. The amplifier should return to normal operation. If the amplifier continues to shut down automatically check the troubleshooting guide on page \_\_\_\_\_ of this manual.

**Signal** - The Signal LED lights when a signal is present in the master bus output. With a source connected to one of the inputs and the input level turned up to 12:00 turn the Master volume up slowly until the Signal LED lights. With a valid source playing it is normal for the Signal LED to be lit solidly.

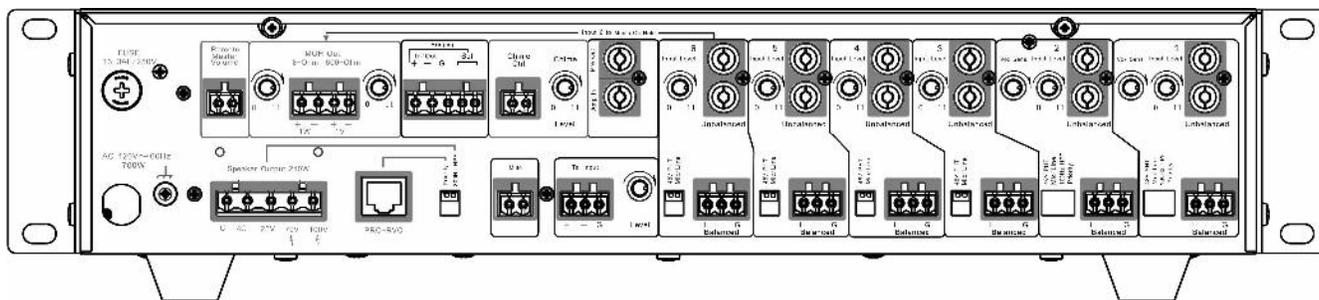
**-3dB LED** - The -3dB LED lights when the signal in the master bus output is 3dB below clipping. This allows the user to adjust levels to prevent clipping and overloading the amplifier.

**OL LED** - The OL LED is the overload warning light. When the OL LED flashes occasionally it is indicating occasional peaks in the output signal. If the OL LED lights solidly the amplifier is being overdriven. Immediately reduce the input levels and the Master volume control until the OL LED is not illuminated. Occasional flashing is normal.

**MP3 Input** - The Mp3 input is a stereo 3.5mm 1/8" jack that will accept signals from practically any device with a headphone output jack. Mp3 players, iPod's, portable phones, computers, receivers etc. The Mp3 Input also feeds the music on hold MOH outputs. If a source is connected to the rear panel Input 6 jacks the Mp3 input will automatically override that source when a connector is inserted. It is possible to have two output zones with different sources being broadcast simultaneously by using the Mp3 input or rear panel Input 6 jacks as the source for the MOH output and using any other input as the source for the main outputs. The Mp3 jack is a quick way to connect to the amplifier without needing access to the back panel.

**Note:** All front panel knobs are removable and can be replaced with the included non-adjustable security covers.

## Rear Panel Operation and Connections.



### **NOTE: Rear Panel color coding**

GREEN = Input

RED = Output

**Inputs 1-2 (Input 1 C-540)** - Inputs 1 & 2 are priority inputs. These inputs function the same as the other input channels but offer some added features suitable for paging microphones. Priority means "override". Simply stated the microphone or line level signal will override all other inputs. Rear Panel Connections and dip switches:

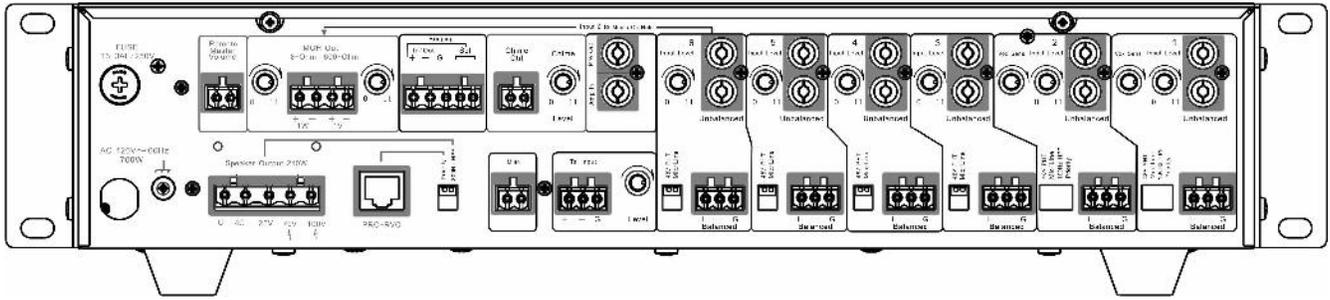
**RCA** - These jacks accept line level signals from CD's, DVD's, Tuners etc. This is an unbalanced input that sums the signal to mono. The INPUT LEVEL knob does not affect the RCA input level.

**EURO BALANCED** - This is a balanced three pin detachable connector that will accept microphone or line level sources. You can also connect an unbalanced source by connecting the HOT to + and connecting the COLD or (return) to - and attaching a jumper to - and G. The INPUT LEVEL control affects the input level for the EURO input jack.

**INPUT LEVEL** - This rotary control adjusts the input level for the EURO connector only. Use this to match the correct input level based on the signal strength of the device connected. A good starting point is the 12:00 position. If you hear distortion turn the control counter clockwise. Turn this control clockwise to increase the input level.

**VOX SENS** - This rotary control adjusts the sensitivity of the override circuit. Turning this control clockwise triggers the auto sensing circuit sooner. This control will function only when the PRIORITY #4 dip switch is ON. Start at the 12:00 position, If the override cuts in and out when there is no page signal present (called false triggering) then reduce the SENS by turning counter clockwise. If the leading edge of the page is cut off increase the sensitivity by turning the SENS control clockwise.

**DIP SWITCH 1** 48v PHT - This switch applies 24v to the + and - pins of the EURO BALANCED jack. This feature provides phantom power for condenser microphones. NOTE: always set the 48v PHT dip switch UP or OFF if a line level source or dynamic microphone source is connected where phantom power is not needed.



**DIP SWITCH 2 MIC/LINE** – This switch adjusts the sensitivity of the EURO BALANCED jack between microphone level signals and line level signals. Set the switch up for line level and down for microphones. Note: line level sources will overload the EURO BALANCED input if the dip switch is set to MIC. If the dip switch is set to LINE and a microphone is connected the input level will be too low. Always make sure this dip switch is set appropriately for the device that is connected.

**DIP SWITCH 3 100Hz HPF** - With this switch ON all frequencies below 100Hz will be cut at 18dB per octave. Use this switch with microphones to roll off unwanted low frequency rumbles and minimize pops from mouth noises.

**DIP SWITCH 4 PRIORITY** – With this switch ON the source connected to the EURO BALANCED connector will override all other inputs. This is commonly used for paging microphones where the background music source would be connected to one of the inputs 3-6 and a paging microphone would be connected to input 1 or 2. When the microphone signal is broadcast the back ground music source will automatically mute and then return to normal after the broadcast is complete.

**INPUTS 3-5 (INPUT 2 C-540)** The remaining inputs function exactly the same as inputs 1 & 2 except they do not have VOX SENS, 100Hz HPF, and Priority.

It is still possible to connect a microphone or a line level source to any input. This provides the ultimate flexibility.

**INPUT 6 (INPUT 3 C-540)** These inputs have multiple functions. They can operate the same as all the other inputs to feed the main outputs and they also feed the music on hold MOH outputs. When using the music on hold MOH outputs connect your music source or store caster input here. The dual RCA jacks and the EURO BALANCED jacks can feed the music on hold MOH outputs.

**NOTE:** The front panel Mp3 jack can also be used to feed the music on hold MOH outputs. When a source is plugged into the front panel Mp3 jack it will automatically override the source plugged into the input 6 (or input 3 C-540) RCA jacks. If the front panel volume knob is turned up this input will broadcast on the main outputs as well as the MOH output. Effectively you can create two output zones with different sources. Please see the music on hold MOH section for more information.

**PRE OUT** – This RCA jack is an unbalanced pre-amp output (post tone controls) that can be used to connect to other amplifiers or external audio devices. The PRE OUT jack and the AMP IN jack can be used to create and effects loop to feed an external equalizer or feedback eliminator. Take the PRE OUT to the input of the external device and take the output of the external device to the AMP IN jack to create the loop.

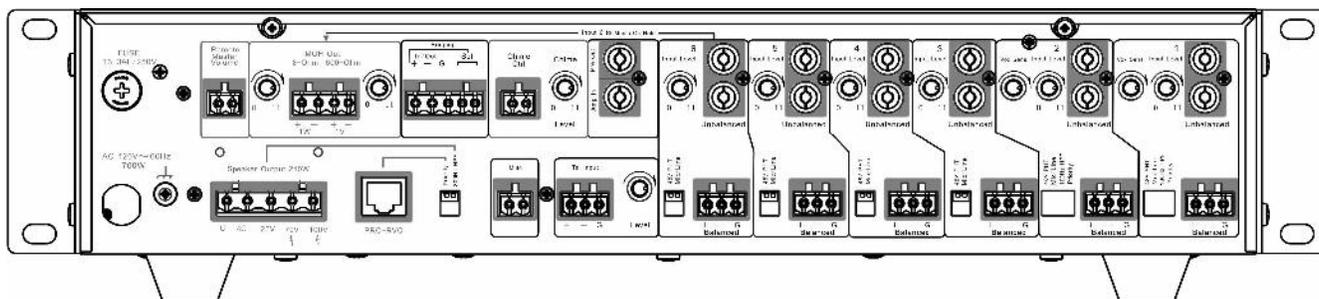
**AMP IN** - The AMP In jack can be used to amplify signals from another mixer or external device. The internal pre-amp section is overridden when a jack is connected to AMP IN. This can be used to convert the C-8120/8240/540 into a slave amplifier or used as an effects loop as described above in the PRE OUT section.

**TEL INPUT** – This is a balanced audio input that is designed to accept signals from an analog telephone output. Due to the varied output levels from different telephone systems we have provided a level control that allows precise level adjustments.

**NOTE:** The TEL INPUT automatically overrides all signals in the pre-amplifier and broadcasts the page when an announcement is made through the telephone system.

**NOTE:** Some telephone systems carry noise and DC voltages on their outputs. We recommend using the optional SA-TEL1 isolation transformer between the phone output and the TEL INPUT to eliminate these problems.

Most phone systems provide a balanced tip & ring audio output that can be connected to the + and – terminals on the EURO input jack.



**CHIME** - The CHIME contacts can be used as a pre-announce tone for paging or as an alert tone for doorbells, telephones, etc. Simply short the contacts with a switch from a microphone or external contact closure and the chime tone will broadcast. We have provided a CHIME LEVEL control to set the precise volume level desired.

**MUTE** - The MUTE contacts can be used to instantly mute background music sources for immediate paging or emergency situations. Simply short the MUTE contacts with a switch or external contact closure and all inputs will mute with the exception of the PRIORITY inputs. PRIORITY inputs will function as normal provided the PRIORITY function is ON. NOTE: When using the PRO-RVC for a remote music input it is recommended to short the mute contacts. The PRO-RVC will override other music sources that may be connected to the amplifier.

**MOH OUT** - The MOH music on hold output offers two output levels. 1.) 600 ohm 1v balanced which is used to drive line level music on hold inputs. 2.) 8 ohm 1 watt which is used to drive phone systems that require more input gain. This output can also be used to power an 8 ohm loudspeaker. The MOH output can also be used as a Zone 2 output. Input 6 (input 3 C-540) and the front panel Mp3 input signals are fed to the MOH output. All other inputs are fed to the main outputs. It is possible to have two completely different sources broadcasting simultaneously by using the MOH output to feed another amplifier or 8 ohm speaker and the main outputs to feed another group of speakers.

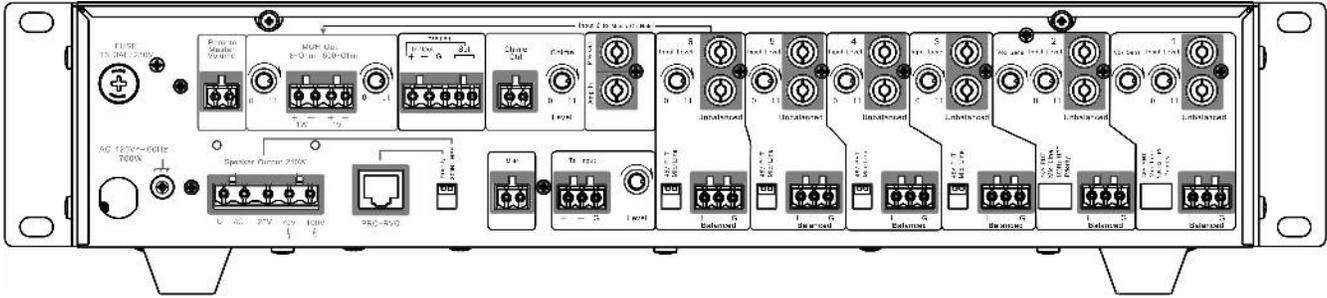
**BRIDGING INPUT/OUTPUT** - (C8120 & C8240 ONLY) Many installations require flexibility where multiple amplifiers need to be combined for large room activities and then separated for smaller multiple room activities. This is referred to as room combining. Sound Acoustics amplifiers offer this feature with simple easy to use bridging terminals. These terminals provide a way to send and receive balanced line level audio from the internal mixer of the C-8120 or C8240. The bridging terminals balanced signal can be sent long distances without introducing noise or interference using 22 AWG or 24 AWG shielded two conductor stranded copper wire. Connect the bridging + / -- / G terminals of one Sound Acoustics amplifier to the same terminals on another Sound Acoustics amplifier. The amplifiers will operate independently until the SEL contacts are shorted.

**SEL CONTACTS (C8120 & C8240 ONLY)** - Shorting the SEL terminals using a switch or external contact closure will combine the pre-amp signals in both the amplifiers. The amplifiers will operate as one larger amplifier. It is possible to connect multiple amplifiers to create a room combining system. When connecting multiple amplifiers together you may need to adjust the volume levels on the individual amplifiers to create a well balanced mix.

**NOTE:** To combine two or more amplifiers the SEL contacts must be shorted on each amplifier you wish to combine.

**EXAMPLE:** Connect the bridge terminals of amp 1 to amp 2. Short the SEL contacts on amp 1. The amps will not combine. Short the SEL contacts on both amps 1 & 2 and the amps will combine. Any source that is connected to either amp will broadcast on both amps.

**REMOTE MASTER VOLUME (C8120 & C8240 ONLY)** - All Sound Acoustics amplifiers have the ability to control the master volume remotely through the PRO-RVC input. More about this is the next section. The C-8120 and C-8240 provide an additional remote master volume control input that can be controlled remotely from a 10kohm potentiometer. Set the maximum volume level desired with the front panel master volume control and connect a 10Kohm potentiometer to the REMOTE MASTER VOLUME contacts. The potentiometer will act as an attenuator, controlling the master volume of the amplifiers remotely.

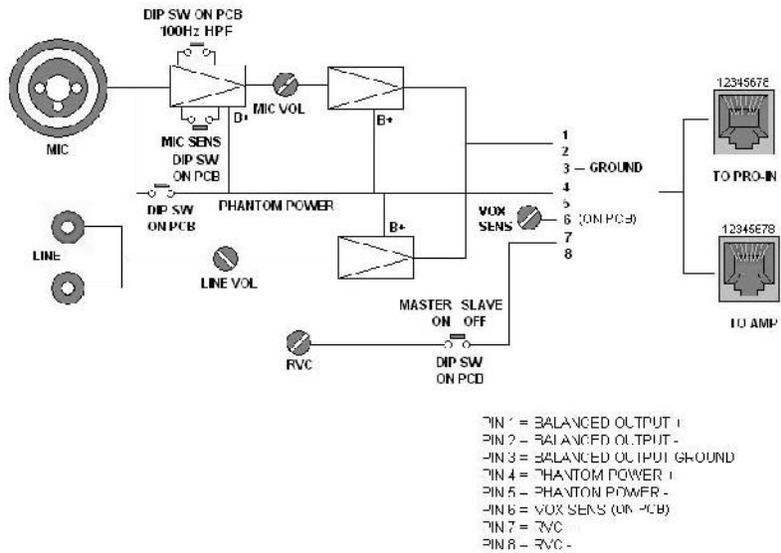


**PRO-RVC** - All Sound Acoustics amplifiers provide the unique PRO-RVC input. This is an RJ45 female jack that allows the connection of up to three PRO-RVC remote microphone/line mixers. This feature can provide up to 6 additional inputs (3 microphone & 3 line level) with individual volume control plus remote master volume control to any Sound Acoustics amplifier. The PRO-RVC connects with Cat5 cable providing one RJ45 input and one RJ45 output for daisy chaining up to three PRO-RVC's to each amplifier. Power for the PRO-RVC is provided by the amplifier and additional power supplies are not necessary. When using the PRO-RVC short the MUTE contacts if you want the PRO-RVC to maintain constant priority over other inputs connected to the amplifier. The PRO-RVC input provides a PRIORITY switch. Set the PRIORITY switch to ON for momentary override of other sources connected to the amplifier. Please read the PRO-RVC installation guide included with the PRO-RVC.



It is possible to use the PRO-RVC with other amplifier brands as a stand alone remote mic/line mixer by installing the optional RVC-ADAPT. Consult your authorized Sound Acoustics dealer for more information.

MODEL PRO-RVC





<b>SPECIFICATIONS</b>	<b>C-540</b>	<b>C-8120</b>	<b>C-8240</b>
Output Power RMS	40 watts	120 watts	240 watts
Frequency Response	40Hz- 20kHz	40Hz- 20kHz	40Hz- 20kHz
Total Harmonic Distortion	0.5% at rated power	0.5% at rated power	0.5% at rated power
Signal To Noise Ratio Mic	90dB	90dB	90dB
Signal to Noise Ratio Line	90dB	90dB	90dB
Signal to Noise Ratio Tel	75dB	75dB	75dB
Signal to Noise Ratio Output			
Inputs Microphone	3 expandable to 6	6 expandable to 9	6 expandable to 9
Inputs Line Level	5 expandable to 8	9 expandable to 12	9 expandable to 12
Inputs Telephone	1	1	1
Input PRO-RVC	1	1	1
Chime with level adjust	1	1	1
Speaker Outputs	4ohm,25,70,100V	4ohm,25,70,100V	4ohm,25,70,100V
Line level Outputs	2	3	3
Bridging In/Out		1 Balanced	1 Balanced
MOH Output	8ohm 1W & 600 ohm 1V	8ohm 1W & 600 ohm 1V	8ohm 1W & 600 ohm 1V
Remote Master Volume	Via PRO-RVC	10Kohm Pot & PRO-RVC	10Kohm Pot & PRO-RVC
Power Requirements AC	AC120V/60Hz	AC120V/60Hz	AC120V/60Hz
Power Consumption AC	120W	350W	700W
Dimensions	8.5"W x 4"H x 11.25"D	17"W x 4" H x 14"D	17"W x 4" H x 14"D
Shipping Weight			
Optional Accessories 1	Rack Kit SA-RK2.5	Rack Kit SA-RK2.0	Rack Kit SA-RK2.0
Optional Accessories 2	1-3 PRO-RVC	1-3 PRO-RVC	1-3 PRO-RVC
Optional Accessories 3	SA-TEL1 600 ohm telephone isolation transformer	SA-TEL1 600 ohm telephone isolation transformer	SA-TEL1 600 ohm telephone isolation transformer

**Contact Information**

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**Warranty**

Sound Acoustics commercial amplifiers are warranted to be free from defects in workmanship and materials for a period of three (3) years without charge for parts or labour. The warranty applies only to the original owner. The owner's responsibilities are to provide proof of purchase and transportation to the dealer the unit was purchased from or transportation to the Sound Acoustics factory. This warranty does not apply to units which have been subject to misuse, abuse, neglect or improper installation, and does not apply to repairs or alterations by unauthorized personnel. This warranty specifically excludes responsibility for consequential damage.

Retention of your dated ORIGINAL BILL OF SALE is required to obtain service under the terms of the warranty.