



Fleet Radio Products, LLC  
"Radio Interoperability Problem Solvers"  
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Made In USA

# 4-Channel Audio Combiner / Amplifier w/ Remote Master Volume & Mute Control

## MODEL 301 / 301B

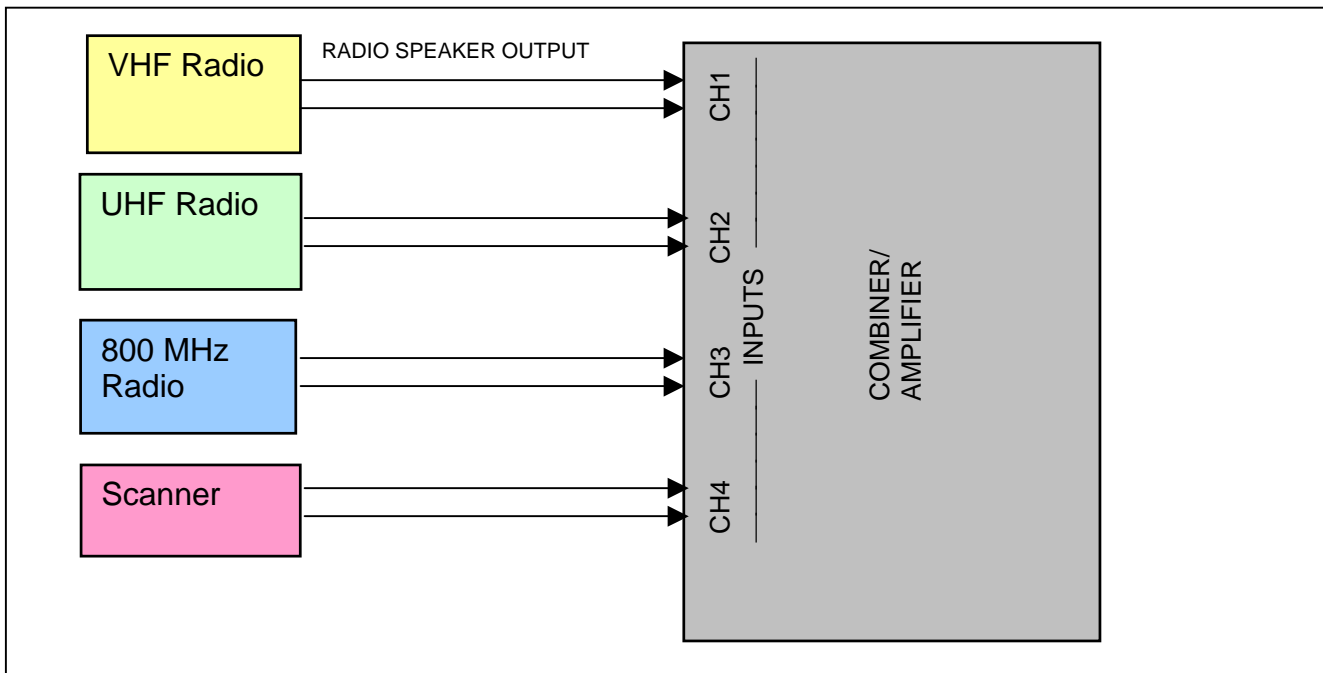
**Congratulations!** You have just purchased one of the finest audio combiners/amplifiers currently on the market. Much time has been spent developing and testing this product to ensure that you will have a trouble-free installation and high-performance product. Please read the following instructions before you attempt to install this product.

Should you have questions about the installation, please use the contact information at the end of this document to get assistance.

### Installation

#### Connecting the Audio Inputs

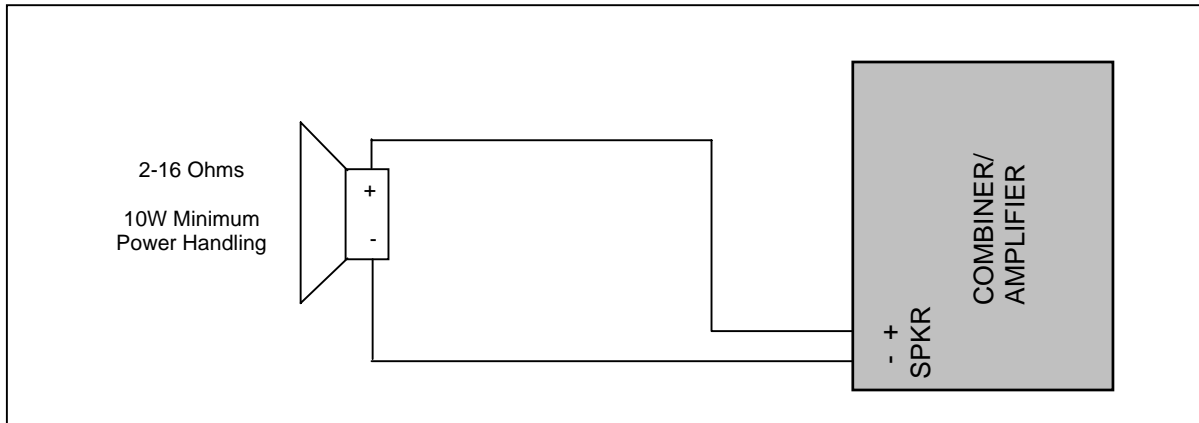
You may choose up to 4 speaker level audio sources to connect to the amplifier. These will typically be from commercial land-mobile radios, scanners, cell phones, etc. Virtually any device that has a speaker output can be connected to the combiner/amplifier. This amplifier is compatible with all radios regardless of make, model or band since each input is transformer isolated. Connect each speaker output to the amplifier's input screw terminals as shown in the diagram below. Input polarity does not matter. The amplifier input impedance is approximately 16 Ohms.



### Connecting the output speaker(s)

This amplifier is designed to drive from one to several speakers. When connecting multiple speakers, attention must be paid to the impedance of each speaker. Typically, you will find that most mobile radio speakers are 4, 8, or 16 Ohm. You may use a simple volt/ohmmeter/DMM to estimate the impedance of each speaker. Make a note of the resistance and use it to determine which configuration you will use to connect the speakers, i.e. series, parallel, or a combination of both. Remember that the amplifier must not “see” less than a 2 Ohm load. The best compromise between amplifier performance and distortion will usually be had with a 4 Ohm load.

When using multiple speakers, pay particular attention to the power dissipation of each speaker. You do not want to end up with one speaker operating more loudly than the others. For this reason, it is preferable to use speakers with the same impedance. If you have trouble with this calculation, please contact Fleet Radio for assistance.



Connecting a Single Speaker

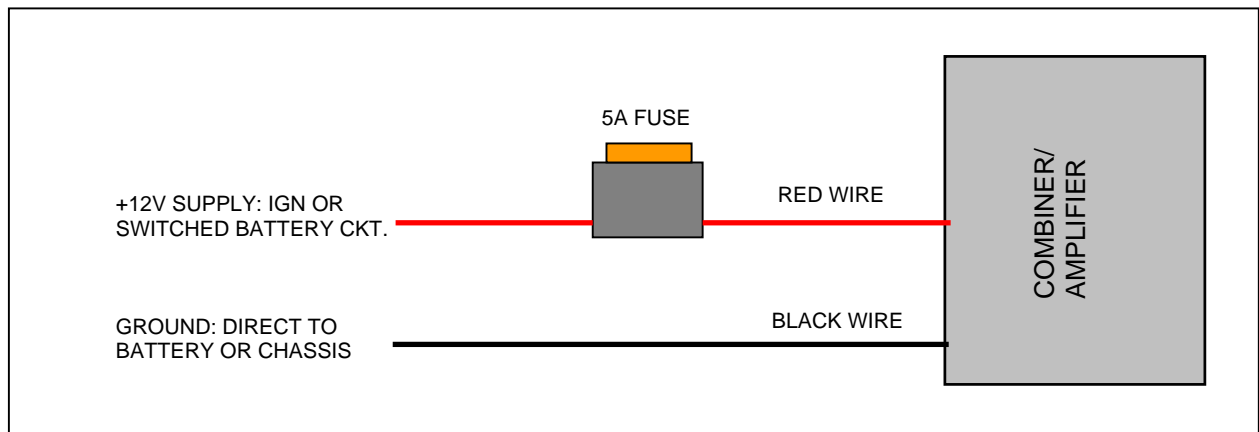
### Note on Connecting Center Channel Speakers with built-in Crossovers

Most center channel speakers contain a built in crossover that only passes frequencies in the voice band. Because of the inductors and capacitors used in these filters, the speaker will likely have a very high impedance to DC. The amplifier may incorrectly interpret this as an open load. If the FAULT LED illuminates during amplifier turn-on, place a 100 Ohm ½ Watt Carbon or Metal Film resistor across the amplifier's speaker output terminals. The resistor will “trick” the amplifier's diagnostic circuitry into thinking that a normal speaker is connected.

### Power Connections

The decision on whether to connect the amplifier to an ignition-switched or “hot-all-the-time” circuit will vary with the application. Although the combiner/amplifier only draws 91mA when no audio is passing through it, it is not recommended to leave it on all the time. 91mA is enough current to drain a car battery in as little as a few days.

Placing a 5A fuse in-line with the red, or positive (+) wire, is essential for safe operation. The warranty will also be void if this is not done at the time of installation. Where possible, use the fuse included with the amplifier.



If you would like to use a low-current remote turn-on signal (12VDC @ 36mA) to activate the combiner/amplifier, please contact Fleet Radio for instructions on how to install this option. Some radio models have a SWB+ (switched battery positive) output that can be used to automatically turn-on the amplifier when the radio's power button is pressed.

### **Adjusting the Input Levels**

Each input level should be adjusted prior to operating the amplifier. Following these procedures will prevent an excessive input level from overdriving the amplifier input and, thus, causing the output audio to distort. Do the following for each connected input channel:

1. Decrease the combiner/amplifier sensitivity by turning the level potentiometer counter-clockwise or "all the way down."
2. Increase the volume on the input device by turning the volume "all the way up." Open the radio's squelch so that white noise is emitted from the speaker output.
3. Slowly increase the combiner/amplifier sensitivity by turning the level potentiometer clockwise or "back up" while watching the FAULT LED.
4. Stop turning the potentiometer when the FAULT LED just begins to glow.
5. Adjust radio to a comfortable volume. The adjustment process is complete.

During normal operation, the FAULT LED should remain off except during very brief periods of bass notes or voice peaks. This is because the FAULT LED also functions as a clipping indicator. If the input levels are set too high, the amplifier may not be able to accurately reproduce the sound. The input is said to be "overdriven" due to an excessive input level. The output begins to "clip" or distort the signal. If this should happen, simply turn down the input level adjustment on the offending channel.

### **Operation**

Operating the combiner / amplifier is simple. When power is applied, the amplifier will turn on in the unmuted state. The LED on the remote should be green. Adjust the master volume control on the remote to a comfortable listening level. If you wish to mute the amplifier, press the volume knob. The amplifier will mute and the LED on the remote will turn red. Press again to unmute.

*Note: It is important to note that the amplifier will not continue to pass audio if the remote is unplugged. For critical applications, mount the combiner / amplifier in such a way that the remote cable is not subject to becoming unplugged.*

### **Specifications**

Input Voltage	8-18VDC	(12VDC Nominal)
Input Current	3A MAX	(Use 5A Fuse)
Quiescent Current	91mA	(unmuted with no audio signals present)
Remote Turn-On (optional)	36mA	
Audio Output Power	65W MAX@2Ω, 45W RMS@2Ω with 10% distortion	
Mute Attenuation	90dB	
Frequency Response	30Hz – 20kHz	
Features:	Master Volume Control Mute Function with Status LED 16Ω Transformer Isolated Inputs Individual Input Level Controls Output Short Circuit Protection Thermal Shutdown Protection Fault Diagnostic Indicator	
Dimensions	4.53x3.24x1.57" LWH w/o Mounting Flanges	

## **Troubleshooting**

### **FAULT LED is on:**

This amplifier features built-in fault diagnostics and protection circuits. Should either lead of the speaker output be shorted to ground or +12V, the amplifier will shut down and illuminate the FAULT LED. The amplifier will not be damaged, but will instead wait for the problem to be corrected. If the speaker output leads are shorted together **or open**, the FAULT LED will also illuminate. Speaker loads less than 4 ohms *may* also cause this LED to light, or cause the amplifier to overheat and shutdown. It will come back on after cooling off. Mounting the unit to a metal surface is not typically necessary as the aluminum case itself can dissipate the necessary amount of heat generated by the amplifier.

*If driving a speaker with a built-in crossover, be advised that the load presented to the amplifier may be overly inductive or capacitive which may cause the amplifier to fault. These loads typically have a very high DC resistance and look like an open circuit to the amplifier's diagnostic circuitry. See the section on "Connecting the Output Speaker" for instructions on how to fix this problem.*

The FAULT LED also functions as a clipping indicator. If the input levels are set too high, the amplifier may not be able to accurately reproduce the sound. The output begins to "clip" or distort the signal. If this should happen, simply turn down the input level adjustment on the offending channel. See the section on "Adjusting the Input Levels".

### **Amplifier "ON" LED does not come on:**

First, check that power is applied to the unit. Is the external fuse good? Is the voltage at least 10.5V? Is the amplifier connected to a solid ground? If the unit is indeed getting power, but the green power LED is not lit, then the problem is internal to the amplifier and service will be needed. Please call the factory for assistance.

The amplifier features internal reverse-polarity and transient protection circuits. If the power leads are connected with the wrong polarity, the external fuse will open and prevent damage to the amplifier. If no fuse is installed during this event, the amplifier may be permanently damaged. The combiner/amplifier contains no user-serviceable parts.

## **Warranty / Repair Information**

Fleet Radio Products, LLC sells this product with the understanding that the user will perform all necessary tests to determine the suitability of this product for the user's intended application. Fleet Radio Products, LLC. warrants that this product will be free from defects in materials and workmanship for a period of **TWO YEARS** from the date of purchase. Upon prompt notification of any warranted defect, Fleet Radio Products, LLC. will, at its option, repair or replace the product with a new unit, or refund the full purchase price. Proof of purchase may be required. Misuse or unauthorized modification of the product without the consent of Fleet Radio Products, LLC. will void all warranties. Please call for a return authorization number.

### **Limitations and Exclusions**

THE ABOVE WARRANTY IS THE SOLE WARRANTY CONCERNING THIS PRODUCT, AND IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE SPECIFICALLY DISCLAIMED. LIABILITY FOR BREACH OF THE ABOVE WARRANTY IS LIMITED TO COST OF REPAIR OR REPLACEMENT OF THE PRODUCT, AND UNDER NO CIRCUMSTANCES WILL FLEET RADIO PRODUCTS, LLC. BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

THIS WARRANTY IS TRANSFERABLE. REPAIR OR REPLACEMENT OF DEFECTIVE PARTS MUST BE MADE AT A FACILITY DESIGNATED BY FLEET RADIO PRODUCTS, LLC.

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