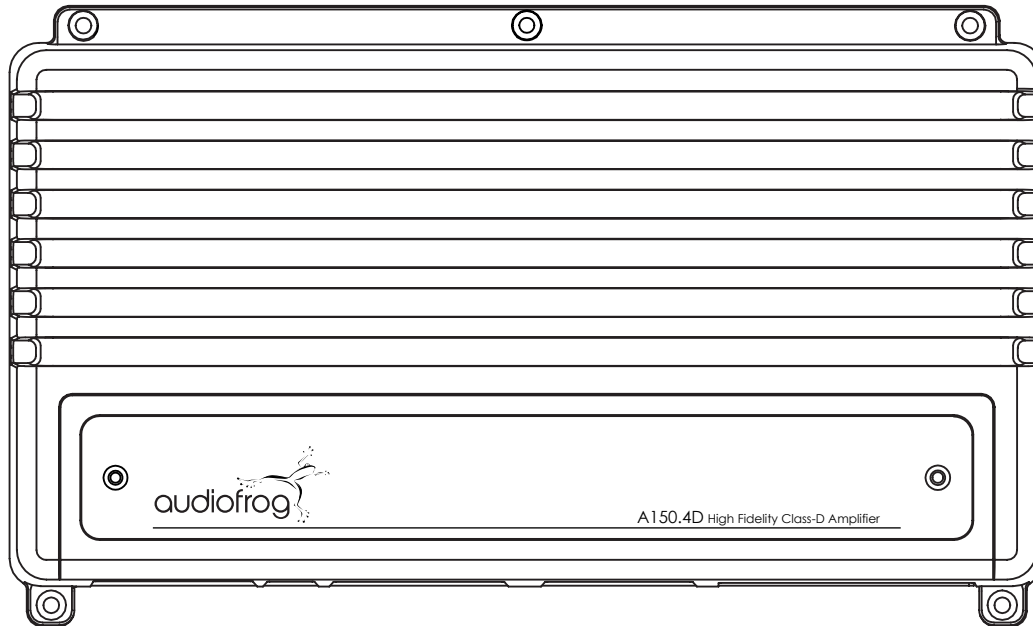


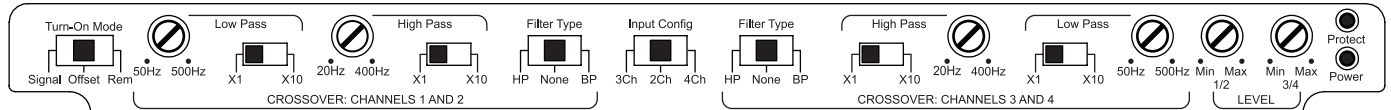
A150.4D

4-Channel High Fidelity Class-D Amplifier

A600.1D

1-Channel High Fidelity Class-D Amplifier





Controls and Functions (150.4D):

Turn On Mode:

Signal: Senses audio signal on the speaker level inputs (>800mVp) and on the line level inputs (>45mVp) to turn on the amplifier. There will be a short delay in turn-off to accommodate silence between tracks.

Offset: Senses the 6V BTL reference when the speaker level inputs are connected to the outputs of a BTL amplifier or head unit.

Rem: Senses the remote turn on output of the head unit or to the car's ACC circuit.

Crossover Channels 1 and 2 (3 and 4)

Filter Type:

HP: Only the low frequencies below the High Pass filter frequency selection will be removed from the signal.

BP: Low frequencies below the High Pass filter frequency selection and high frequencies above the Low Pass filter frequency selection will be removed from the signal.

None: No high pass or low pass filter will be applied. All frequencies will pass.

Low Pass Control Group:

50Hz-500Hz: Adjusts the low pass filter frequency to any frequency between 50Hz and 500Hz. High frequencies above this selection will be removed.

X1-X10: When this switch is set to X1, the filter frequency range is 50Hz-500Hz. When this switch is set to X10, the filter frequency range is set to 500Hz-5000Hz

High Pass Control Group

20Hz-400Hz: Adjusts the high pass filter frequency to any frequency between 20Hz and 400Hz. Low frequencies below this selection will be removed.

X1-X10: When this switch is set to X1, the filter frequency range is 20Hz-400Hz. When this switch is set to X10, the filter frequency range is 200Hz-4000Hz.

Input Config:

3Ch: Input 1 sends signal to output channels 1, 3 and 4. Input 2 sends signal to output 2, 3 and 4. Inputs 3 and 4 are not used. Outputs 3 and 4 will output the sum of inputs 1 and 2 (1+2). Use when output channels 3 and 4 will be bridged to drive a subwoofer with two input connections.

2Ch: Input 1 sends signal to outputs 1 and 3. Input 2 sends signal to outputs 2 and 4. Inputs 3 and 4 are not used.

4Ch: Each input sends signal to its corresponding output (1-1, 2-2, 3-3, and 4-4).

Level:

Adjusts the voltage sensitivity (level) of

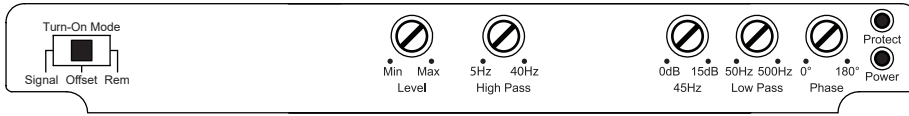
each pair of inputs. For line level input sensitivity, Min is 10Vp and Max is 500mVp.

DO NOT APPLY MORE THAN 30Vp TO THE SPEAKER LEVEL INPUT CONNECTIONS OR THE UNIT WILL BE DAMAGED!

Power: This LED will light green to indicate that the unit is on.

Protect: This LED will light red to indicate a fault and the amplifier will produce no sound. Faults include: power supply input voltage is too high or too low, output connection is short, amplifier heat sink temperature is too high.

Notes about crossover settings: When using any pair of amplifier channels in BP (bandpass) mode, the HP (high pass) frequency control MUST be set to a LOWER frequency than the LP (low pass) frequency control. For example, if channels 3 and 4 will drive midrange speakers only, the LP frequency control might be set to 3500Hz and the HP frequency control might be set to 100Hz. The signal sent to the speaker will be frequencies BETWEEN 100Hz and 3000Hz. If there is no output from a pair of channels, check these settings carefully.



Controls and Functions (A600.1D):

The Turn-On Mode and Level control for the A600.1D operate exactly like the controls on the A150.4D. The Power and Protect LED functions are also the same as the 150.4D. Because the A600.1D is a single channel amplifier designed to drive low frequency speakers or subwoofers, the crossover controls are somewhat different and are explained below.

High Pass 5Hz-40Hz: Adjusts the high pass filter frequency to any frequency between 5Hz and 40Hz. Low frequencies below this selection will be removed. For subwoofers in vented boxes, set this control about a half an octave below the frequency at which the enclosure is tuned to prevent too much excursion from damaging the speaker. This is also useful for infinite baffle subwoofers. If your system doesn't require a high pass filter for the subwoofer, set this control to its minimum setting (5Hz).

Low Pass 50Hz-500Hz: Adjusts the low pass filter frequency to any frequency between 50Hz and 500Hz. High frequencies above this selection will be removed.

Phase 0°-180°: Adjusts the phase of the output at the crossover frequency be-

tween 0 degrees and 180 degrees. Use this control to match the phase of the subwoofer with that of the front speakers to help blend the sound of the subwoofer into the sound of the front speakers.

45Hz 0dB-15dB: Adjusts the amount of 45Hz in the output between 0dB and 15dB. Adjust this as you wish but be careful because too much bass boost can cause distortion at high output when the amplifier runs out of available power at high volume. Each 3dB of boost requires double the power of the unboosted frequencies.

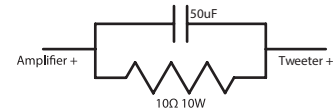
3dB requires twice the power. 6dB requires four times the power. 9dB requires eight times the power. 12dB requires sixteen times the power and 15dB requires 32 times the power sent to the unboosted frequencies.

Remote Level Control (optional): This control, if installed, allows the level of the output of this amplifier to be controlled from the front of the car. The RLC will vary the output level of the amplifier between off (fully counter-clockwise) and the level control setting selected with the level control on the amplifier (above).

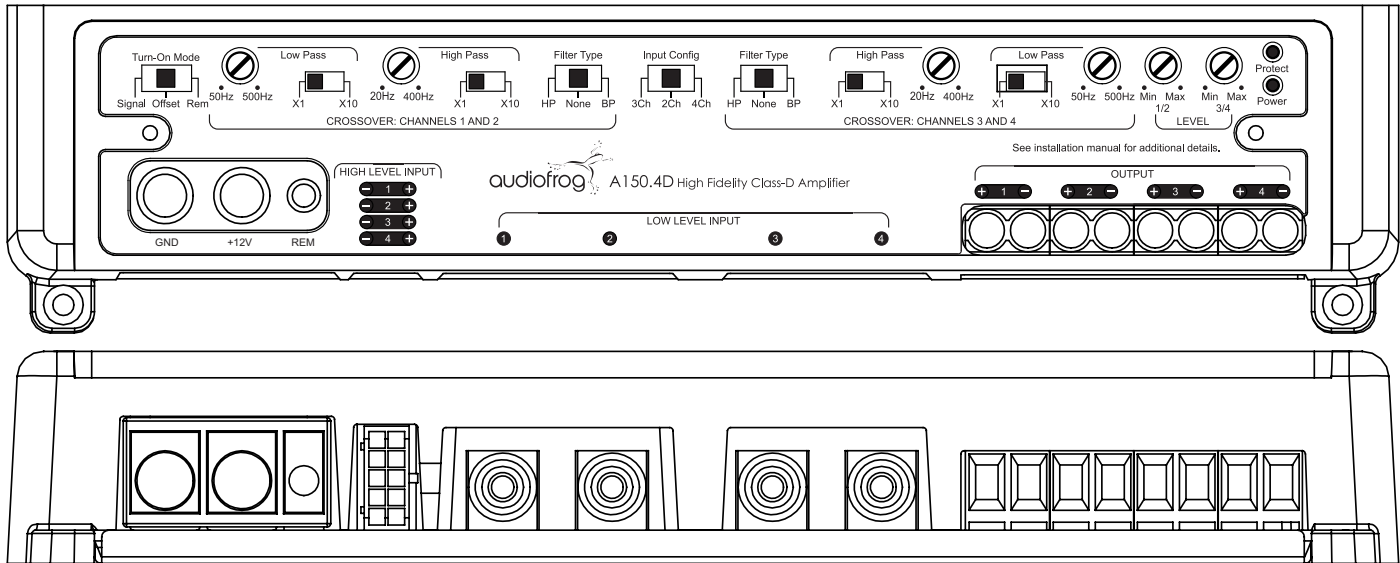
Using These Amplifiers With a DSP: When using these amplifiers with a DSP, you can (and should) defeat the A150.4D's on-board crossovers by selecting "None" with the Filter Type switch if the filter will be implemented in the DSP. When using the A600.1D with a DSP, adjust the Low Pass filter to its highest frequency (500Hz) and the High Pass filter to its lowest frequency (5Hz) if you will implement the high pass filter in the DSP. You can also use the high pass filter in the amplifier to protect your subwoofer from over excursion if your DSP doesn't include a high pass filter for the subwoofer.

When Driving Tweeters Separately in an Active System: Set the high pass filter frequency about an octave above the tweeter's free air resonance (Fs). An octave is a doubling or halving of frequency. So, if your tweeter's Fs is 1.5kHz, set the crossover at 3kHz.

Use a protection device to save your tweeters in case of a mishap. A capacitor and a resistor work well. Choose the value of the capacitor to provide a -3dB point about an octave below your crossover. The values below are suitable for all Audiofrog tweeters.



Connections: A150.4D



GND: Connect to the metal part of the vehicle's body. Scrape away paint to ensure a low resistance connection. Do not tin the wire with solder.

+12V: Connect to the + terminal of the vehicle's battery. You MUST install a fuse holder with a 60A fuse within 18" (45cm) of the battery's terminal to protect the power wire and the car in case of a short circuit. Do not tin the wire with solder.

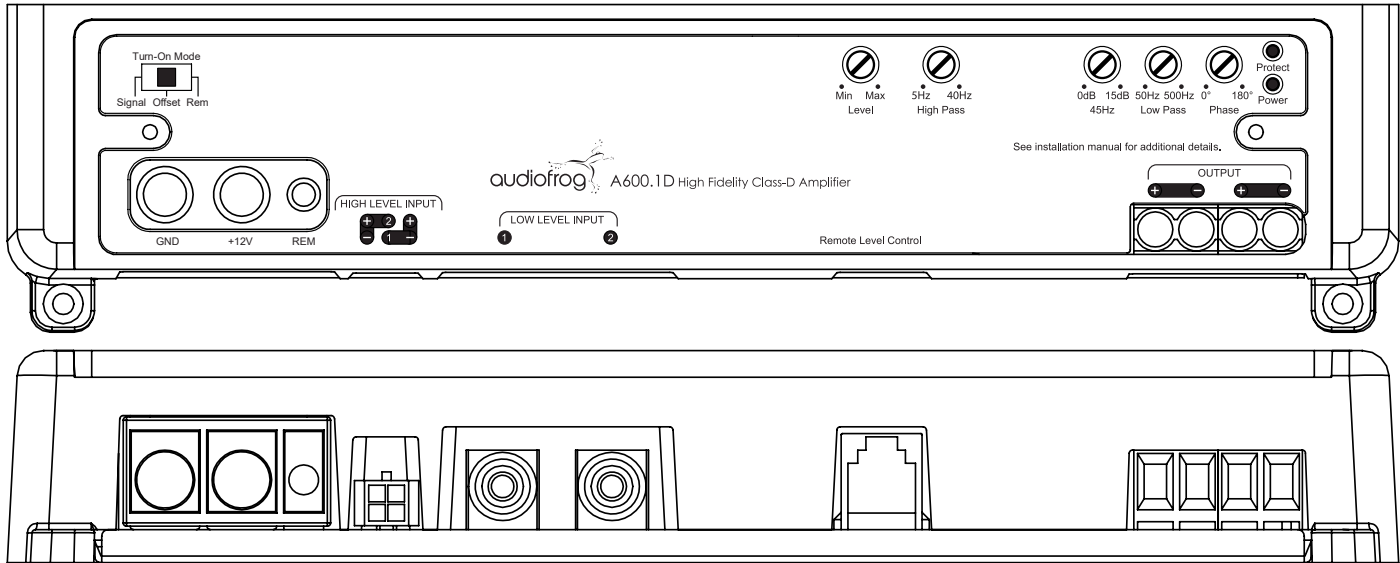
REM: Connect to the remote turn on circuit of the head unit or the vehicle's accessory circuit. Alternately, use the offset or signal sensing feature of the amplifier. Signal sensing works with the low and high level inputs. Do not tin the wire with solder.

HIGH LEVEL INPUT: These can be connected to the outputs of the head unit or the factory installed amplifier intended to drive speakers directly. Be sure to observe proper polarity. DO NOT EXCEED 30Vp.

LOW LEVEL INPUT: Connect these to the RCA type outputs of an aftermarket head unit or preamp adapter or the low level output of a factory installed head unit.

OUTPUT: Connect to speakers with an impedance of at least 2Ω. To bridge the amplifier channels, connect one speaker to 1+ and 2- and connect the other speaker to 3+ and 4-. The minimum speaker impedance in bridge mode is 4Ω. Do not tin the wire with solder.

Connections: A600.1D



GND, +12V, REM: Please see previous page. These connections are the same as for the A150.1D. You **MUST** install a fuse holder with a 60A fuse within 18" (45cm) of the battery's + terminal.

HIGH LEVEL INPUT, LOW LEVEL INPUT: Please see previous page. These connections are the same as for the A150.4D with the following exceptions. The A600.1D is a single channel amplifier. You can use one input or two. If you use two, the output signal

will be the sum of the inputs. If you have a stereo signal from your head unit, connect the left and the right output to the inputs. The output will contain the right and left signal. Observe proper polarity.

Remote Level Control: Connect the RJ-11 cable between this connector and the connector on the remote level control. The remote level control is sold separately. See the next page for tips about making your own custom remote level control.

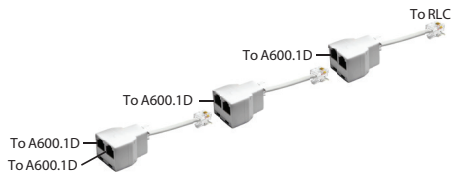
OUTPUT: Connect to a speaker or combination of speakers with a minimum final impedance of 2Ω. The A600.1D is a single channel amplifier. Two sets of terminals are provided to make connecting two speakers easy. The two + terminals are common inside the amplifier. The two - terminals are also common inside the amplifier.

Remote Level Control (Optional): For one A600.1D and one RLC, plug one end of the RJ11 cord into the RLC and the other end into the amplifier.

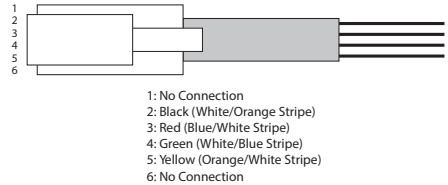
One RLC can control more than one A600.1D amplifier using a phone jack splitter like the one shown below. Plug one connector into the RLC and plug each of the other two into the A600.1D amplifiers.



If you have more than two A600.1D amplifiers and you want to use one RLC, you'll need additional splitters. Connect as many as you need in the configuration shown below



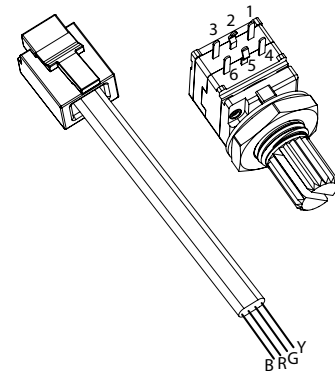
If you need to control several amplifiers with a single level control and you would prefer not to use a bunch of splitters, you can cut and splice the wires carefully. Be sure to match the colors or pin positions carefully. The color code and pin-out is provided below:



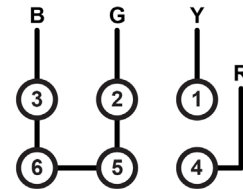
More about the RLC: No audio signal is passed through the RJ11 cable. The RLC contains a potentiometer that controls the gain of a voltage-controlled amplifier in the A600.1D's preamplifier circuit. Splitting the signal between several amplifiers doesn't degrade the signal or reduce the amplifier's performance.

If you'd like to make a custom control with a different potentiometer style or a different knob, you can do so easily.

You'll need an RJ11 phone cord from which you can cut one of the plugs so you can solder the wires to the potentiometer. You'll also need a dual-gang 20kΩ log taper potentiometer. There are many styles from which you can choose. An example is shown here (right).



Connect the phone cord's black, red, green and yellow wires to the potentiometer according to the diagram below. Pins 2, 3, 5 and 6 must be connected together and to the black and green wires. Pin 1 must be connected to the yellow wire and pin 4 must be connected to the red wire. You can connect several amplifiers to one potentiometer in this manner.



Setup and Adjustments:

Crossovers: The primary function of a crossover is to keep small drivers safe. The secondary function of a crossover is to provide an appropriate division of low and high frequencies to ensure an inaudible transition from one speaker to another.

In order for a speaker to play high frequencies well, it has to be small and the diaphragm along with the rest of the moving parts must be lightweight. Small speakers, tweeters especially, aren't designed to handle a lot of power. This is OK, because most music doesn't contain a lot of signal at the highest frequencies.

For tweeters, choose a high pass filter frequency that's about twice the tweeter's free air resonance (Fs). You can find that information in the owner's manual. For midrange and midbass speakers, choose a high pass filter frequency equal to or higher than the speaker's free air resonance. Speakers make the most distortion at and around Fs, so avoiding that range of frequencies is an easy way to make your system sound better.

For subwoofers, we don't have any choice but to use them around their resonance. Fortunately, our hearing is less sensitive to distortion at really low frequencies.

Using a high pass filter on a subwoofer in

an infinite baffle installation or in a vented enclosure is very helpful in preventing over excursion which sounds bad and will eventually destroy the speaker.

When using the crossovers in the A150.4D and the A600.1D:

1. Be sure that the HIGH PASS filter frequency is set to a frequency lower than the LOW PASS filter frequency.
2. Don't set a bandpass filter less than an octave wide. The low pass filter frequency should be set to at least two times the high pass filter frequency.
3. The filter slopes in these amplifiers are 12dB/octave. 12dB/octave crossovers change the phase of the signal by 180 degrees. Alternate the polarity of adjacent crossover bands to fix this condition. For example, if you are driving tweeters with one pair of channels, midrange with the other pair of channels and a subwoofer with an A600.1D, connect the tweeters in the proper polarity. Reverse the polarity of both midrange speakers and connect the subwoofer in proper polarity. This ensures proper crossover performance.

Phase Control (A600.1D) Use the phase control on the A600.1D to align the phase of the subwoofer with the phase of the front speakers. You can do this with an RTA or by ear, if you don't have an RTA. The

setting that provides the most midbass impact is correct.

Levels: The LEVEL controls for each channel are intended to match the input sensitivity of the amplifier with the output signal of a radio or signal processor. In car audio systems, we also use these level settings to set the balance between different frequency bands, to ensure that amplifiers and speakers don't produce excessive amounts of distortion and to minimize the amount of noise present in the system.

There are many ways to test signals and set levels and the appropriate process differs depending on whether you're using the speaker level outputs of a factory head unit or amplifier, an aftermarket radio with preamp outputs or a DSP.

Please see the Audiofrog Tech Blog at www.audiofrog.com for process suggestions for these various circumstances and for system configuration suggestions.

Never, under any circumstances, should you use sine wave tracks to set your system levels with the tweeters or small midrange speakers connected to the amplifier. Doing so will burn the voice coils in an instant. ALWAYS disconnect tweeters and midrange speakers during this procedure if you choose this method.

Specifications:**A150.4D****A600.1D**

Power Output @ 4Ω:	100 Watts x 4 Channels	450 Watts x 1 Channel
Power Output @ 2Ω:	150 Watts x 4 Channels	600 Watts x 1 Channel
Power Output @ 4Ω (Bridged):	300 Watts x 2 Channels	N.A.
THD@ Rated Power:	0.1%	0.1%
THD @ 20% of Rated Power:	0.05%	0.02%
Signal to Noise Ratio @ 1 Watt:	80dB	80dB
Signal to Noise Ratio@ Rated Power:	102dB	108dB
Frequency Response (+/- 1dB):	10Hz-45kHz	10Hz-400Hz
Input Sensitivity (Line Level Inputs):	0.5Vp-10Vp	0.5Vp-10Vp
Maximum Input Voltage (Speaker Level Inputs):	30Vp	30Vp
Damping Factor @ 4 ohms, 100Hz:	>600	>600
Signal Sensing Turn-On Threshold (Line Level Inputs):	45mVp	45mVp
Signal Sensing Turn-On Threshold (Speaker Level Inputs):	800mVp	800mVp
Input Impedance (Line Level Inputs):	10kΩ	10kΩ
Input Impedance (Speaker Level Inputs):	1.2kΩ	1.2kΩ
Input Type:	Differential	Differential
Crossover Slope:	12dB/oct Butterworth	12dB/oct Butterworth
Required Power Line Fuse:	60A	60A
Dimensions (L x W x H):	210mm x 126mm x 32mm	210mm x 126mm x 32mm
	8-17/64" x 4-61/64" x 1-17/64"	8-17/64" x 4-61/64" x 1-17/64"

Warranty: Audiofrog A Series amplifiers purchased in the U.S. are warranted to the original purchaser against manufacturing defects for one year from the date of original purchase. Save your purchase receipt. A valid purchase receipt is required for warranty service. This warranty does not cover damage caused by improper use or installation. If you lack the experience or the tools and materials necessary to install your gear properly, please consider having your system installed by an authorized Audiofrog retailer. If you have purchased your Audiofrog amplifier outside the U.S. please consult your local retailer or distributor for warranty policy in your country.



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