

Directed[®]
AUDIO

OWNER'S
MANUAL



model | *1200t*

CONGRATULATIONS

Congratulations for choosing a Directed Audio power amplifier from Directed Electronics, the industry leader in high quality automotive security and audio equipment since 1990.

Directed Audio power amplifiers continue to set new standards of performance, reliability, and affordability in the mobile electronics industry.

Featuring high-efficiency MOSFET power supplies, flexible on-board crossovers, and state of the art audio design, Directed Audio power amplifiers will excite and delight the mobile sound

enthusiast with years of high-quality audio reproduction.

Directed Audio power amplifiers come with a two-year limited warranty if installed by an authorized Directed dealer. If not installed by an authorized dealer, Directed Audio power amplifiers are covered by a one-year, parts-and-labor limited warranty.

Be sure to retain your original sales receipt and refer to the warranty section of this guide for full details about your coverage.

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LIMITED TWO-YEAR CONSUMER WARRANTY

Directed Electronics, Inc. promises to the original purchaser, to replace this product should it prove to be defective in workmanship or material under normal use, for a period of two years from the date of purchase by the dealer as indicated by the date code marking of the product PROVIDED the product was installed by an authorized Directed dealer. During this two year period, there will be no charge for this replacement PROVIDED the unit is returned to Directed, shipping pre-paid. If the unit is installed by anyone other than an authorized Directed dealer, the warranty period will be one-year from the date of purchase by the dealer as indicated by the date code marking of the product. During this one-year period there will be no charge for this replacement PROVIDED the unit is returned to Directed, shipping pre-paid. This warranty is non-transferable and does not apply to any unit that has been modified or used in a manner contrary to its intended purpose, and does not cover damage to the unit caused by installation or removal of the unit. This warranty is void if the product has been damaged by accident or unreasonable use, neglect, improper service or other causes not arising out of defects in materials or construction. ALL WARRANTIES INCLUDING BUT NOT LIMITED TO EXPRESS WARRANTY, IMPLIED WARRANTY, WARRANTY OF

MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, AND WARRANTY OF NON-INFRINGEMENT OF INTELLECTUAL PROPERTY ARE EXPRESSLY EXCLUDED TO THE MAXIMUM EXTENT ALLOWED BY LAW, AND DIRECTED NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY LIABILITY IN CONNECTION WITH THE SALE OF THE PRODUCT. DIRECTED HAS ABSOLUTELY NO LIABILITY FOR ANY AND ALL ACTS OF THIRD PARTIES INCLUDING ITS AUTHORIZED DEALERS OR INSTALLERS. Unit must be returned to Directed, postage pre-paid, with: consumer's name, telephone number, and address, authorized dealer's name and address, and product description. IN ORDER FOR THIS WARRANTY TO BE VALID, YOUR UNIT MUST BE SHIPPED WITH PROOF OF INSTALLATION BY AN AUTHORIZED DIRECTED DEALER. ALL UNITS RECEIVED BY DIRECTED FOR WARRANTY REPAIR WITHOUT PROOF OF DIRECTED DEALER INSTALLATION WILL BE COVERED BY THE LIMITED ONE-YEAR PARTS AND LABOR WARRANTY. Note: This warranty does not cover labor costs for the removal and reinstallation of the unit. BY PURCHASING THIS PRODUCT, THE CONSUMER AGREES AND CONSENTS THAT ALL DISPUTES BETWEEN THE CONSUMER AND Directed SHALL BE RESOLVED IN ACCORDANCE WITH CALIFORNIA LAWS IN SAN DIEGO COUNTY, CALIFORNIA.

FEATURES

- High-speed MOSFET switching power supply and dual N-channel MOSFET outputs
 - Stereo, mono, or simultaneous stereo/mono operation
 - Thermal, DC offset, reverse polarity, short circuit and over/under voltage protection
 - Top-mounted controls located under smoked plexiglass cover
 - Programmable features controlled via ESP serial databus and Directed's proprietary Bitwriter® tool (998T) *
- * The Bitwriter® unit must have version 1.8 or above to access the amplifier features menu.
- Top and side panel ESP I/O ports for connection for ESP-2 Security components and current Bitwriter module with Audio programming
 - Continuously variable 12 dB/octave two-way crossover (Selectable 24 dB LP/mono mode)
 - Variable 0-15 dB bass EQ function
 - Buffered stereo full-range RCA output jacks
 - Gold-plated RCA jacks ensure maximum signal transfer
 - Rugged one-piece extruded heat sink finished with injection-molded mounting feet

WARNING



High-powered car audio systems may produce sound pressure levels that exceed the threshold at which hearing loss may result.

They may also impair a driver's ability to hear traffic sounds or emergency vehicles. Use common sense and practice safe listening habits when listening to or adjusting your audio system.

NOTE

Prior to servicing your vehicle ensure that the alarm system is **disarmed**. Due to the amplifier's anti-theft feature (if enabled), if the main power to the

amplifier is removed while the alarm is armed the amplifier operation is disabled. The amplifier operation must then be reset by your Directed dealer.

INSTALLATION GUIDELINES

1. Please read this owner's manual carefully before installing this amplifier.
2. Disconnect the battery ground terminal prior to making any electrical connections.
3. Check for any hazards or obstructions such as gas tanks, fuel or brake lines, and wiring harnesses before mounting the amplifier.
4. Pick a mounting location that will provide adequate access and ventilation and protect the amplifier from heat, moisture, and dirt.
5. Avoid sharp metal areas when routing cables to the amplifier, and run RCA cables away from the power cables and other potentially noisy car harnesses.
6. The amplifier should be grounded with a short, heavy gauge wire connected directly to the car at a bare metal surface, preferably scraped body sheet metal. Do not use factory grounded locations, seat bolts, or brackets that are spotwelded.
7. Always fuse your power connection within in 8 to 10 inches of the battery terminal. Use a fuse or circuit breaker rated slightly more than the on-board fuse(s) of the amplifier(s). The gauge of power wire used should take into account the total current draw of the system, and the length of the wire used. IASCA and other auto sound competition organizations have charts available for this; you can also find a chart in the MECP study guide. Minimum wire gauge recommendations for the individual amplifiers are listed on the specification page. Always use the same gauge wire for the amplifier ground that you use for the power wire. Be sure to examine the battery ground

cable of the vehicle, and if necessary, upgrade it by adding an additional ground wire that is the same gauge as the amplifier's power wire. Remember, the amplifier can only deliver its rated output when it is not current limited by the power and ground supply wires.

8. This amplifier is designed to drive a speaker load that measures from 1 to 8 ohms. Keep in mind that heat is the long-term enemy of automotive electronics and the lower your speaker load, the more heat is generated. For low impedance speaker applications or restricted ventilation installations, an external cooling fan may be advisable.
9. Battery and ground connections to the vehicle should be made with

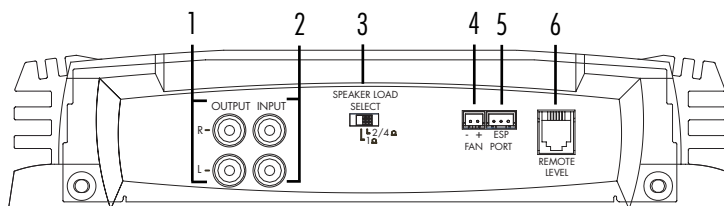
crimped ring terminals of the appropriate size (surface area is what counts); soldering the terminals after crimping is also recommended.

10. Due to the high-frequency MOSFET switching power supply, filtering the power cable is not generally required (remember that the amp can't deliver full output if the power supply is restricted). Proper grounding of the signal source is mandatory for the amplifier to reach its performance peak. If the RCA inputs are not grounded adequately via the signal source, electrical noise from the vehicle may be picked up in the system.

FRONT PANEL CONNECTIONS/STATUS LED

1. **RCA Output Jacks** - These pass through RCA jacks can be used to send a signal to a second amplifier.
2. **RCA Input Jacks** - Accepts line level outputs from head units or signal processors at voltages between 250 mV and 8 volts.
3. **Speaker Load Select** - Set 1 or 2/4 ohm to match the stereo load impedance of the system.
4. **Fan Port** - connection port for connecting external, 12v DC brushless fan.
5. **ESP Port** - For connecting the amplifier to ESP-2 alarm or second 1200T amplifier.
6. **Remote Level** - Optional accessory which allows the level to be adjusted remotely (usually located for control by the vehicle's driver).

FIGURE 1—AMPLIFIER CONNECTIONS 1200T FRONT

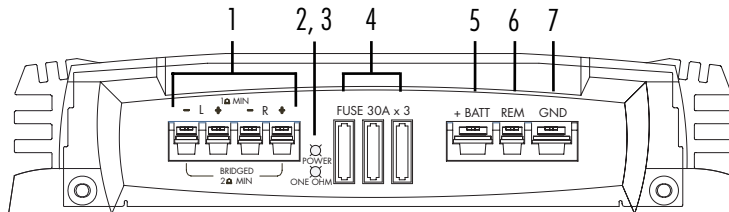


REAR PANEL CONNECTIONS

1. **Speaker Out Terminals** - Connect the speakers to these terminals. (Refer to the *Speaker Connection* section of this guide.)
2. **Power LED** - This LED will illuminate Green to indicate the amplifier is on and operating normally. The LED will extinguish if the amplifier is off or if the amplifier shuts-down due to short circuit, DC offset, or over-heating.
3. **One Ohm LED** - This LED will illuminate when the 1-ohm mode is selected.
4. **Fuse 30A x 3** - These fuses protect the amplifier against internal electrical damage and are meant to protect the amplifier only. All other power connections should be fused at the source.
5. **(+) BATT** - Connect this terminal through a FUSE or CIRCUIT BREAKER to the positive terminal of the vehicle battery or the positive terminal of an isolated audio system battery.
6. **REM (Remote Turn On)** - This terminal turns on the amplifier when (+) 12 volt is applied to it. Connect it to the remote turn on lead of the head unit or signal source. If a (+) 12 volt remote turn lead is not available, a Remote Power Adapter (P/N #55000) can be used to supply a remote turn on signal. DO NOT connect this terminal to constant (+) 12 volt.
7. **GND (Ground)** - Connect this terminal directly to the sheet metal chassis of the vehicle using the shortest wire necessary to make this connection. Always use wire of the same gauge or larger than the (+) 12 volt power wire. The chassis connection point should be scraped free of paint and dirt. Use only quality crimped and/or soldered connectors at both ends of this wire. DO NOT connect this terminal directly to the vehicle battery ground terminal or any other factory ground points.

WARNING: Always protect this power wire by installing a fuse or circuit breaker of the appropriate size within 12 inches of the battery terminal connection.

FIGURE 2—AMPLIFIER CONNECTIONS 1200T REAR



TOP PANEL FEATURES

Control Panel Cover

The gain and filter controls are located under a control panel cover on top of the amplifier. The control panel cover must be removed to gain access to the gain and filter controls.

Remove/Install

Four Allen-head screws hold the control panel cover to the amplifier top panel, one at each corner. They can be removed with the wrench supplied in the hardware pack.

AMPLIFIER CONTROLS TOP

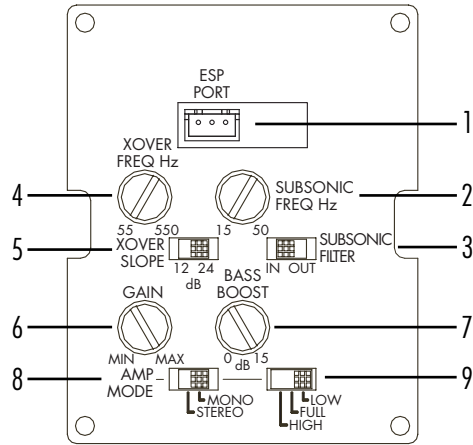
1. **ESP Port** - Allows programming of the amplifier using the Bitwriter®.
2. **Subsonic Frequency Hz** - This control adjusts the subsonic filter cutoff (between 15-50 Hz).
3. **Subsonic Filter** - The IN position places the subsonic filter into the system, the OUT position takes the filter out of the system.
4. **Crossover Frequency Hz** - Adjusts the crossover point (50-550 Hz) for the on-board active crossover.
5. **Crossover Slope Switch** - Controls the roll-off rate of filter for the on-board active crossover. Switchable between 12 or 24 dB per octave. The 12 dB position functions for both mono and stereo inputs. The 24 dB position functions for mono, low pass mode only.
6. **Input Gain Adjustment** - Controls amplifier sensitivity and is used to match the input level of the amplifier to the output level of the signal source.
7. **Bass Boost Adjust** - 0 to 15 dB of additional bass boost. Rotating control clockwise increases bass boost.

Amp Mode Switches

8. **Mono/Stereo Switch** - This switch works in conjunction with the Crossover Slope switch, refer to item 5 above.
9. **Crossover Select Switch** - High attenuates low frequencies and is used for mid-range speakers and tweeters. Full does not attenuate any frequencies and is for full range speaker systems. Low attenuates high frequencies and is used for subwoofers speakers.

NOTE: The 24 dB position is intended only for use with the Mode switch in the Mono position and the the Crossover switch to Lowpass position. If 24 dB is selected for other operating modes, asymmetrical operation of the 2 channels will result.

FIGURE 3—AMPLIFIER CONTROLS TOP



NOTE: The adjustment for Gain is a digital control (potentiometer). Although it will have the feel of adjustment like the other controls on this panel (there are no detents), the Gain control has 33 discrete steps in adjustment. Hence a small rotational change in the Gain adjustment may not affect the gain of the amplifier.

ESP FEATURES AND CONTROLS

The ability to access the feature settings of your amplifier is only possible with the use of a Directed Electronics Bitwriter® unit. Firmware version 1.8 or later is required in the Bitwriter®. Versions prior to 1.8 will not program the amplifier.

MAIN FEATURES

1. **Turn-on delay** - 0.75, 1.00, 1.25, 1.75, 2.25, 2.75, or 3.25 seconds is selectable. **2.75** seconds is the factory default setting.
2. **Anti-theft** - On/Off/Reset Anti-Theft Trigger. Selecting ON places the unit in the alarm monitoring (amplifier disable on loss of 12V) condition. Off disables alarm monitoring. Reset Anti-Theft Trigger allows the amplifier to be unlocked from the loss of 12V. **Off** is the factory default setting.

To unlock the amplifier, use the following procedure:

A. Plug the Bitwriter® into one of the ESP ports and turn the Bitwriter® ON.

B. Select **Anti-Theft** from the menu.

i. Select **Anti-Theft Reset** from the submenu.

ii. Press **Write** twice.

C. Select **Anti-Theft** from the menu again.

i. Select **Off** from the submenu.

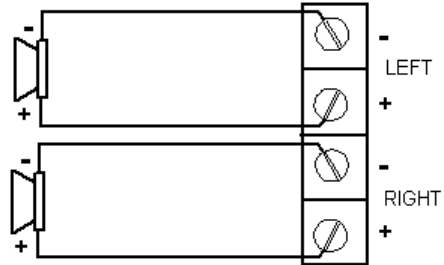
ii. Press **Write** twice.

A "**Writing Successful**" message will appear on the Bitwriter® display if the procedure was successful.

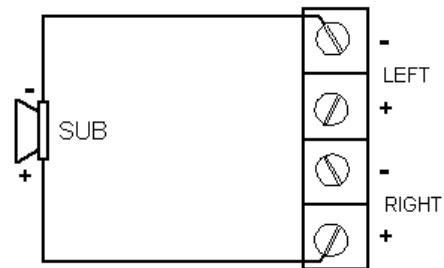
3. **Valet monitoring** - Enable/Disabled **Disabled** is the factory default setting. The amplifier will not power up if the alarm system is in Valet.
4. **Input gain adjustment - Unlock** is the factory default setting. Lock/Unlock, in the lock position the gain adjustment located on the top panel is software locked at the input gain range that is selected.
5. **Input gain range** - 0.25–0.50, 0.50–1.25, 1.25–3.00, or 3.00–6.00 V, and **0.20–8.00V** (factory default). This limits the gain adjustment to the specified range.
6. **Fan Control** - On/Auto/Off
This controls an external fan connected to the fan port.

SPEAKER WIRING DIAGRAMS

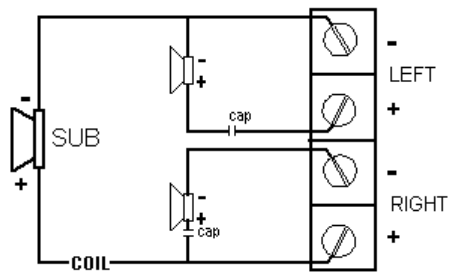
Stereo operation (top view)



Mono operation (top view)



Simultaneous stereo/mono operation (top view)



CROSSOVER SETTINGS AND GAIN ADJUSTMENT

Your Directed Audio power amplifier needs to be adjusted carefully to achieve maximum performance. These are some guidelines to follow when fine-tuning the amplifier.

- For full-range and simultaneous stereo/mono bass applications, the crossover selection switch should be set to FULL. If the amplifier is driving your subwoofers, set the switch to LOW, and for mid-bass/midrange output, set to HIGH.
- The crossover frequency control needs to be adjusted to suit your particular system. For subwoofer applications, try and keep the setting low enough to prevent image smearing (you should not be able to hear male voices from the subwoofer) but not so low as to create a gap between the subwoofer and the mid-bass/midrange speakers. For mid-bass/midrange settings, try to keep the setting low enough to keep your sound stage in front of you, without overdriving the speaker. It will be to your advantage to spend some extra time with this adjustment, listening to familiar music or system set-up discs to achieve the kind of musical reproduction that you prefer.
- The gain adjustment allows you to set proper signal match for clean, quiet amplifier operation. For full-range and simultaneous stereo/mono bass applications, start by playing some music you are familiar with. With the gain adjustment on the amplifier in the

middle of its rotation, bring up the volume on your head unit to the 3/4 volume setting or until you start to hear distortion or clipping. If you hear distortion before you reach the 3/4 volume setting of your head unit, reduce the gain setting on the amplifier and start to raise the head unit volume again. When you can listen to the music at or slightly above 3/4 on your head unit without audible distortion, slowly raise the gain of the amplifier until distortion is heard, then back off the gain until the distortion is not audible. This setting will allow you to reach full output with all but the quietest of source material, while avoiding excessive noise in the system.

Note: Remember that the 1200r uses a digital gain control with a finite number of adjustment steps. A very small adjustment may not cause any audible change in level.

- The same procedure should be used for adjusting the amplifier when the on board crossover is set to LOW or HIGH, but you will also have to take into consideration the effect that gain adjustment has on system frequency response and imaging. Again, plan on spending some time with music that you know getting the gain and crossover settings the way you like. Test discs and analyzers may help with this process, but in the end it's your ears that count - listen to the music!

SUBSONIC FILTER ADJUSTMENT

This amplifier incorporates a subsonic filter to maximize the performance of a subwoofer. The subsonic filter is a high pass filter that removes unwanted bass output at very low frequencies from the woofer. This increases the output of a subwoofer by as much as 3 dB by increasing the mechanical power handling of the subwoofer. Depending on the type of enclosure the subsonic filter can increase the useable low frequency output by an additional 10 dB! Acceptable boost levels are determined by the type of enclosure used, wattage of the

amplifier, and the woofer's excursion capability.

To adjust this filter, place the Subsonic Filter switch to the IN position and turn the Subsonic Frequency adjustment to the desired frequency (15–50 Hz).

The following guidelines should be used for proper set-up of the subsonic filter to provide optimum performance and reliability from your system.

- | | |
|---------------------|---|
| ■ Sealed Enclosure: | Set to F_s of the woofer or higher. |
| ■ Ported Enclosure: | Set to tuning frequency of enclosure or higher. |
| ■ Sealed Bandpass: | Set to F_s of enclosure. |
| ■ Ported Bandpass: | Set to low tuning frequency of enclosure. |
| ■ Infinite Baffle: | Set to F_s of the woofer or higher. |
| ■ Aperiodic: | Set to F_s of the woofer or higher. |

SPECIFICATIONS

Power Output: 200 Watts RMS X 2 Channels at 4 Ohms and $\leq 1\%$ THD+N
 Signal to Noise Ratio: 80 dBA (reference 1 Watt into 4 Ohms)



RMS continuous power per channel , driven in 4 ohm mode @ 14.4 VDC	225 Watts RMS @ 4 ohms 450 Watts RMS @ 2 ohms 900 Watts bridged @ 4 ohms
RMS continuous power per channel , driven in 1 ohm mode @ 14.4 VDC	150 Watts RMS @ 4 ohms 275 Watts RMS @ 2 ohms 500 Watts RMS @ 1 ohms 1000 Watts bridged @ 2 ohms
Conversion Efficiency	>82% @ 4 ohms
Total Harmonic Distortion	THD+N (10Hz–30kHz BW)
4 ohms, 180 watts	<0.08%
2 ohms, 400 watts	<0.2%
1 ohm, 450 watts	<0.5%
Frequency Response	20-20,000 Hz
Signal-to-Noise Ratio	>98 dB
Separation	65 dB @ 1 kHz
Damping Factor	>150
Crossover Type/Range	2-way Butterworth/55 to 550 Hz
Crossover Slope	12 dB/octave stereo 24 dB/octave mono (Lowpass mode)
Bass Equalization	Variable 0 to +12 dB
Subsonic Filter	Variable, 15–50 Hz

RCA Input/Output Jacks	2-channel in/2-channel buffered full-range out
Input Impedance	30K ohms
Input Sensitivity	Variable from 250 mV to 8 volts
Supply Voltage	10 to 16 VDC
Fusing and Power	30A (qty 3)
Minimum Cable Requirements (AWG)	#8
Dimensions	19 x 9 ³ / ₄ x 2 inches
Port Output (Optional Fan)	12V @<200mA



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The company behind this system is Directed Electronics, Inc. Since its inception, Directed has had one purpose, to provide customers with the finest vehicle security, car stereo products, rear seat entertainment, and accessories available. The recipient of more than 20 patents in the field of advanced electronic technology, Directed is ISO 9001 registered.

Directed® is committed to delivering world-class quality products and services that excite and delight our customers.



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