DT2-800

Full Range Digital Power Amplifier

2 X 200 Watts RMS- 4Ω
2 X 400 Watts RMS- 2Ω

Ultimate Sound, Inc.
138 University Parkway
Pomona, CA 91768
Toll Free: 888-909-9988
Telephone: 909-594-2604
Fax: 909-594-0191

INTRODUCTION

I. Description

This device is a high power, audio amplifier. Use it responsibly. Very loud music can cause permanent hearing loss. This amplifier is intended for installation in vehicles with a 12 Volt, negative ground electrical system. Attempting to connect or operate the amplifier in another type of electrical system may cause damage to the amplifier or the electrical system.

II. About This Manual

Read the Instructions-
Be sure that you have read all operating instructions and understand all safety precautions before installing and operating the amplifier. We recommend that you have your Digitalis amplifier installed by a specialist.

Follow the Instructions-
The instructions are intended to help you safely obtain the best performance from the amplifier. Carefully follow all installation and operating instructions.

Save the Operating Manual-
Keep the manual in a safe place after installing the amplifier. You may have questions later.

Text Conventions used in this Manual-

Bold-
Headings and important information.

Bold, Underlined-
Very important information.

"Bold"-
As labeled on the amplifier, or quoted from elsewhere in this manual.

III. Safety and Operating Precautions-

Caution!
This symbol warns the user of a potential risk or hazard if instructions are not followed.

⇒ This arrow symbol points to a specific instruction for avoiding a potential hazard.

1. Installation

1.1 Installation- Mounting the Amplifier

Step 1- Disconnect the negative (-) battery cable before mounting the amplifier or making any connections. Check the battery and alternator ground (-) connections. Make sure they are properly connected and free of corrosion

Step 2- Choose a mounting location for your amplifier. Find a location on a flat surface away from heat and moisture. Be sure the mounting location and the drilling of pilot holes for mounting will not present a hazard to any wires, control cables, fuel lines, fuel tanks, hydraulic lines, or other vehicle systems or components. Common mounting locations are under the front passenger seat, or in the trunk area. Choose a location with unimpaired air circulation. The amplifier will dissipate heat more efficiently if mounted vertically.

Step 3- Place the amplifier in the mounting location, and mark the positions of the holes with a marker, pen or pencil. Carefully drill the mounting holes in the marked positions.

Caution!

⇒ Check carefully before drilling any pilot holes.

Step 4- Use the supplied mounting screws to securely fasten the amplifier to the mounting surface. Wrap the screw driver shaft with electrical tape to avoid marring the area around the mounting holes.

1.2 Installation- Power Connections

Step 1- Run a power cable from the battery to the amplifier mounting location. Use rubber grommets to protect the cable anywhere it has to go through metal. Use #4 AWG or larger power and ground cable.

Step 2- Connect one end of an in-line fuse holder to the power cable. Connect the other end of the fuse holder to the positive battery post with 20 cm (or less) of the same cable. This fuse location will protect the system and the vehicle against the possibility of a short circuit in the power cable. Be sure to use a fuse and fuse holder adequate for the application. Do not place a fuse in the holder at this time.

The maximum fuse rating for the Digitalis DT2-800 is:
3 X 40 Amps

Caution!

⇒ **Bridging fuses or replacing a fuse with one of a higher rating may cause damage to the amplifier and the vehicle's electrical system.**

Step 3- Run a remote turn on cable from the switched +12V source you will be using to turn on the system components. This may be a toggle switch, a relay, or your source unit's remote trigger wire, or power antenna trigger wire. Run this lead to the amplifier mounting location. Use #18 AWG wire or larger.

Step 4- Locate a secure grounding connection as close to the amplifier as possible. Make sure the location is clean and provides a direct electrical connection to the frame of the vehicle. Connect one end of a short piece of the same size cable as the power cable to the grounding point. Run the other end of the cable to the amplifier mounting location.

Step 5- connect the ground cable to the screw terminal labeled **"POWER, GND"**.

Step 6- Connect the power cable to the amplifier at the screw terminal labeled **"POWER, +12V"**.

Step 7- Connect the remote turn on cable to the screw terminal labeled **"POWER, REM"**.

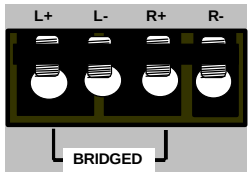
1.3 Installation- Speaker Connections

Step 1- Run #14 AWG or larger connecting wire from your speakers to the amplifier mounting location. Keep speaker wires away from power cables and amplifier input cables. Use grommets anywhere the wires have to pass through holes in the metal frame or sheet metal. Connect to the speakers according to the type of terminals on each speaker.

Step 2- Strip 3/8" of insulation from the end of each wire and twist the wire strands together tightly. Make sure there are no stray strands that might touch other wires or terminals and cause a short circuit.

Step 3- Crimp spade lugs over the wire ends or tin the ends with solder to provide a secure termination.

Step 4- Connect the wire ends to your amplifier as follows:



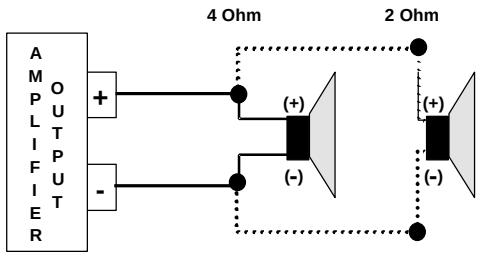
SPEAKER TERMINALS

Follow the **(L+, R+) (L-, R-)**, channel and polarity markings, making sure they match the channel and polarity of the connections at the speakers.

MULTIPLE SPEAKER CONNECTION

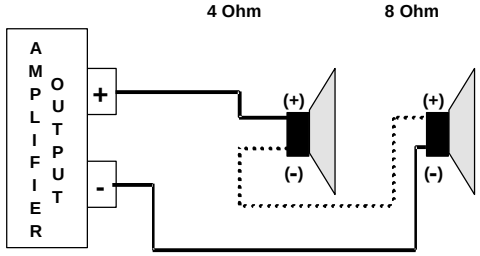
PARALLEL- Each additional speaker decreases the load impedance for the amplifier. The amplifier delivers more current and works harder.

PARALLEL CONNECTION USING 4 OHM SPEAKERS



SERIES- Each additional speaker increases the load impedance for the amplifier. Impedances higher than 8 ohms are rarely used for car audio.

SERIES CONNECTION USING 4 OHM SPEAKERS



1.4 Installation- Self-Bridging, 2+1 Mode

BRIDGED MONO-

Connect a 4Ω ohm speaker to the terminals marked **"(+), BRIDGE, (-)"**, making sure they match the polarity of the connections at the speakers.

Caution!

⇒ Speaker or multiple speaker loads totaling less than 4 ohms are not recommended for **"Bridged"** or **"2+1 Mode",** and may damage the amplifier.

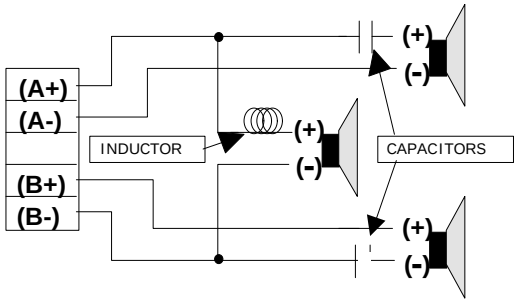
2+1 MODE- (TRI-MODE)

Simultaneous stereo and mono operation, **"2+1 Mode"**, requires a passive crossover to send low frequencies to the mono speaker and higher frequencies to the stereo speakers. The following table lists the component values for a 6 dB/Octave crossover at common frequencies using 4 ohm speakers for stereo and an 8Ω speaker for mono(subwoofer):

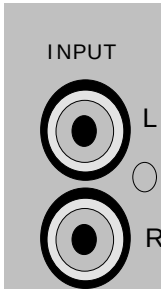
FREQUENCY	INDUCTOR	CAPACITOR
80 Hz	16 mH	470 uF
100 Hz	7.5 mH	330 uF
120 Hz	7.5mH	330 uF
150 Hz	7.5 mH	220 uF

2+1 MODE WIRING DIAGRAM-

Use 100 Volt, non-polar capacitors, and connect them in series with the stereo speakers as shown in the diagram. Connect the inductor in series with the mono speaker as shown in the diagram. Be sure the inductor is rated to handle the power of your amplifier.



1.5 Installation- Input Connections



Low Level, High Impedance, Gold Plated RCA Input and Output Jacks-

Connect the input jacks to a source providing preamp level outputs. Use heavy duty RCA patch cords designed for mobile applications . Run the patch cables carefully, maintaining as much distance as possible from power, speaker, and accessory wiring. Make sure the RCA plugs fit tightly for a secure connection.

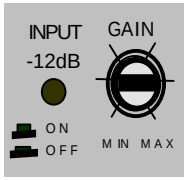
Connect the output jacks to any component that can accept preamp level inputs.

1.6 Installation- Check all Connections

Recheck all connections before reconnecting the negative(-) battery cable. Insert the correct value fuse in the fuse holder at the battery before attempting to turn on the system.

2. Operation

2.1 Operation- Input Level adjustments

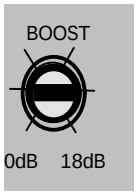


Adjust the input level for the marked channel(s) with a small screwdriver through the opening marked **"GAIN"**. Turn clockwise to increase the level, counter clockwise to decrease. Amplifiers will run cooler and produce less system noise at lower level settings.

A –12dB attenuator can be switched in by pushing in the switch marked **"INPUT –12dB"** for sources with very high signal levels.

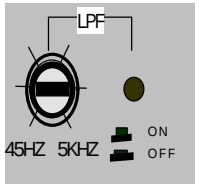
Consult an experienced installation specialist for assistance in balancing the levels in multi-amplifier systems, or systems with signal processing accessories.

2.2 Bass Boost-



Turning the **"BOOST"** control clockwise increases the level of frequencies around 45Hz by up to 18dB when fully clockwise.

2.3 Operation- Built-in Crossovers



CROSSOVER FILTER SELECTION

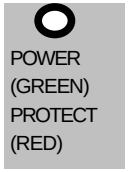
The Digitalis amplifiers have built-in crossover filters for low-pass, high-pass or band-pass operation. Select **" LPF,"** or **"HPF"** by pushing the switch in. If the switch is in the **"OFF"** position, the filter is not active. **"LPF"** selects the low pass filter. **"HPF"** selects the high pass

filter. If both buttons are in the **"OFF"** position, the amplifier is operating full range. If both switches are pushed in, the amplifier is in the band-pass mode.

FREQUENCY ADJUSTMENT

After selecting the crossover function**,** adjust the low pass or high pass frequency control with a small screwdriver through the opening marked **"LPF 45HZ 5KHZ" or "HP 45HZ 5KHZ"**. Turn clockwise to set to a higher frequency, counter clockwise to set to a lower frequency.

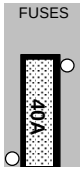
2.4 Operation- Protection Circuits and L.E.D. Indicators



L.E.D. INDICATOR- Dual color LED turns green to provide a visual indication that the amplifier is turned on, or red to indicate that a problem exists and the protection circuitry has protected the amplifier by shutting it down. Turn the system off and correct the problem before turning the system on.

THERMAL PROTECTION- The amplifier will shut down if its temperature exceeds a safe operating level. The amplifier will remain off until it cools to a safe operating temperature. Exercise care, the exterior of the amplifier may get uncomfortably hot to the touch before shutting down.

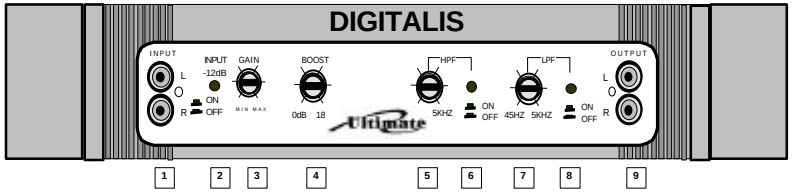
OVERLOAD AND SHORT CIRCUIT PROTECTION- The amplifier will shut down if a short circuit condition exists, or if electrical current demands exceed safe levels.

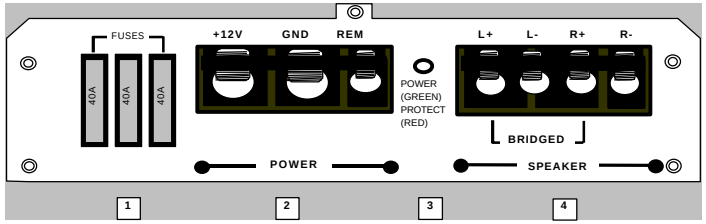


FUSE PROTECTION- A blown fuse indicates a problem that should be corrected before the fuse is replaced. Always replace with the same value fuse. Never substitute a larger value fuse.

2.4 Operation- Location of Terminals, Controls and LED indicators

1. RCA input jacks
2. Input attenuator
3. Input level adjust
4. Bass Boost
5. High pass freq.
6. High pass on/off
7. Low pass freq.
8. Low pass on/off
9. RCA output jacks





1. Fuse(s)
2. Power terminals
3. LED
4. Speaker terminals

Features and Specifications:

DT2-800	
2Ω Stable	Yes
Bridgeable	Yes, 4Ω
Tri-mode	Yes
Terminals	Gold plated RCA jacks, speaker and power terminals
Soft Start	Yes
Inputs	RCA line level inputs
Crossover	Low Pass, High Pass, Band Pass, 12dB/Octave, 45-5kHz.
Bass Boost	Variable, 0 to 18dB @ 45Hz
Protection	Thermal, short-circuit, DC offset, fuse
Power Supply	Pulse Width Modulated, MOSFET power supply, +12V/Negative Ground
Power, 4Ω,	2 X 200 Watts RMS <0.05% THD
Power, 2Ω,	2 X 400 Watts RMS <0.2% THD
Bridged Power, 4Ω	800 Watts RMS <0.3% THD
Signal to Noise Ratio	>90dBA
Frequency Response	15Hz – 25kHz
Separation	>60dBA
Input Sensitivity	400mV – 4V 12dB Attenuator
Fuse	3 X 40A

These specifications are subject to change in the continuing effort to improve the product.

Troubleshooting:

Condition	Possible Cause	Possible Solution
No sound	Low or no remote turn on voltage, or no remote turn on connection	Check the remote turn on connection and the voltage at the amplifier and source unit
	Blown fuse(s)	Check all system fuses
	Wiring problems	Recheck all connections Check for short circuits
	Blown speakers	Check speakers on another amplifier
Amplifier shut down	Protection circuit protecting against overheating or overload	Check for adequate ventilation Check load impedance(2 ohm stereo, 4 ohm bridged) Check speaker wiring for short to the vehicle chassis Reduce input level
Distortion	Input level not properly adjusted Speaker damage	Readjust amplifier input level Check speakers on another amplifier
Poor bass response	Speakers out of phase	Recheck speaker wiring Reverse polarity of one channel
Ticking noise	Radiated noise from spark plug wires	Reroute amplifier input wiring Install a noise filter
Whining noise	Alternator noise caused by poor grounding of amplifier, source, other component, battery, or alternator	Check all ground connections Install a noise filter on the source unit's power cable Install a coupling transformer in the signal path to improve ground isolation for the signal path