



D660/D661

6 CHANNEL DIGITAL POWER AMPLIFIER **INSTALLATION MANUAL AND USER'S GUIDE**

**COMPACT, POWERFUL
& VERY COOL.**



ELAN
HOME SYSTEMS™





**RISK OF ELECTRIC SHOCK
DO NOT OPEN!**

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

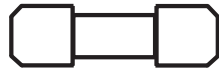


The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

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



SOME DETACHABLE POWER CORD SOCKETS HAVE THIS FUSE SYMBOL WHICH INDICATES THERE IS A REPLACEABLE FUSE WITHIN THE SOCKET. FOR SAFETY PURPOSES REPLACE ONLY WITH SPECIFIED FUSE.

IMPORTANT SAFETY INFORMATION

Read Information—All the safety and operating information should be read before the appliance is operated.

Follow Information—All operating and use information should be followed.

Retain Information—The safety and operating information should be retained for future reference.

Heed Warnings—All warnings on the appliance and in the operating instructions should be heeded.

Wall Mounting—Mounting of this appliance should be done only by an authorized installer.

Ventilation—The appliances should be situated so that their location or position does not interfere with their proper ventilation. These appliances should never be placed near or over a radiator or heat register. These appliances should not be placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

Non-Use Periods—Appliances that are left unattended and unused for long periods of time should be de-energized.

Power Sources—The appliances should be connected to a power supply only of the type described in the operating instructions or as marked on each appliance. If you are not sure of the type of power supply to your home, consult your authorized ELAN dealer or local power company.

Grounding or Polarization—Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one blade wider than the other blade. A grounding type plug has two blades and a third grounding prong. The polarized wide blade and the third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.



Water and Moisture—To reduce the risk of electric shock or fire, these appliances should not be used near water—for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

Power Cord Protection—Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.

Telephones—Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning. Do not use a telephone to report a gas leak if the leak is in the vicinity of the ELAN electronic equipment because of risk of fire or explosion.

Cleaning—Unplug the apparatus from the power outlet before cleaning. Use only a dry cloth to clean the apparatus.

Power Lines—An outdoor antenna should be located away from power lines. When installing an outside antenna system, extreme care should be taken to avoid touching power lines or circuits, as contact with them may be fatal.

Outdoor Antenna Grounding—If an outside antenna or cable system is connected to these audio products, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the U.S. National Electrical Code, and Section 54 of the Canadian Electrical Code, provide information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See the grounding diagram (right).

Overloading—Do not overload wall outlets and extension cords, as this could result in fire or electric shock.

Object and Liquid Entry—Never insert objects of any kind through the openings of these appliances, as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Care should be taken so that objects do not fall and liquids are not spilled into the appliance through openings in the enclosure.

Servicing—Do not attempt to service these appliances yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

Damage Requiring Service—These appliances should be serviced by qualified service personnel when:

- A power supply connection or a plug has been damaged or
- If liquid has been spilled into the appliance or objects have fallen into the appliance or
- The appliance has been exposed to water or moisture or
- The appliance does not appear to operate normally or exhibits a marked change in performance or
- The appliance has been dropped or the enclosure damaged.

Replacement Parts—When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards. The Master Control Unit battery should be replaced only after turning the power off and only by an authorized installer.

Safety Check—Upon completion of any service or repairs to this audio product, ask the service technician to perform safety checks to determine that the audio product is in proper operating condition.

Lightning Storms—Unplug this apparatus during lightning storms or when unused for long periods of time.

Attachments and Accessories—Use only attachments/accessories specified by the manufacturer.

Cart, Stand, Tripod, Bracket or Table—Use only with a cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip over.

Disconnect Device—Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain operable.

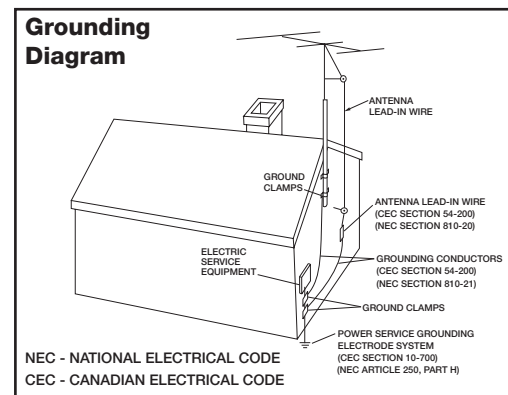


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1. Introduction

Thank You!

Thank you for purchasing this unique product. The ELAN D660 Digital Power Amplifier has been designed specifically for custom installers to provide a perfect solution for multi-room, whole-house applications. Six channels of clean, powerful audio can be combined in dozens of different ways to suit virtually any situation that may be encountered in whole-house distributed audio systems. 'Class-T' Digital Technology and ACE™ (Automatic Clip Eliminator™) allow efficient use of power, ensuring clean, accurate audio at all volume levels in any application.

The ELAN Story

Located in Lexington, KY, USA, ELAN Home Systems has designed innovative multi-room audio/video systems since 1989. ELAN was the first to integrate music, intercom and TV distribution features that used the homeowner's stereos, telephones, and televisions to create the whole-house entertainment experience. These systems allow people to move from room to room, controlling centrally located equipment with ease.

ELAN's product line includes:

- Power Amplifiers
- Multi-Room Controllers
- Intelligent Keypads
- LCD Color Touch Panels
- In-Wall and In-Ceiling Speakers
- Outdoor Speakers
- System Controllers
- Volume Controls
- Telephone-Based Intercom Controllers
- Video Switchers
- Digital Music Management Systems
- Accessories for Home Systems Installation

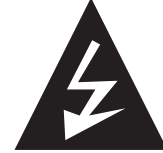
ELAN has introduced nearly 300 new products in the last eight years and has been honored with over 50 industry awards.

Safety Concerns

Use only grounded outlets when powering this product. Making any modification to the power cord could cause unsafe operation and will void the manufacturer's warranty.

AC Power Considerations

The D660 requires 5 Amps of 120VAC current. When designing any whole house system using multi-channel amplifiers, make sure to provide adequate provisions for all electronic equipment to be installed. This may require additional outlets and/or circuit breakers to be installed. Consult a licensed electrician in this case.

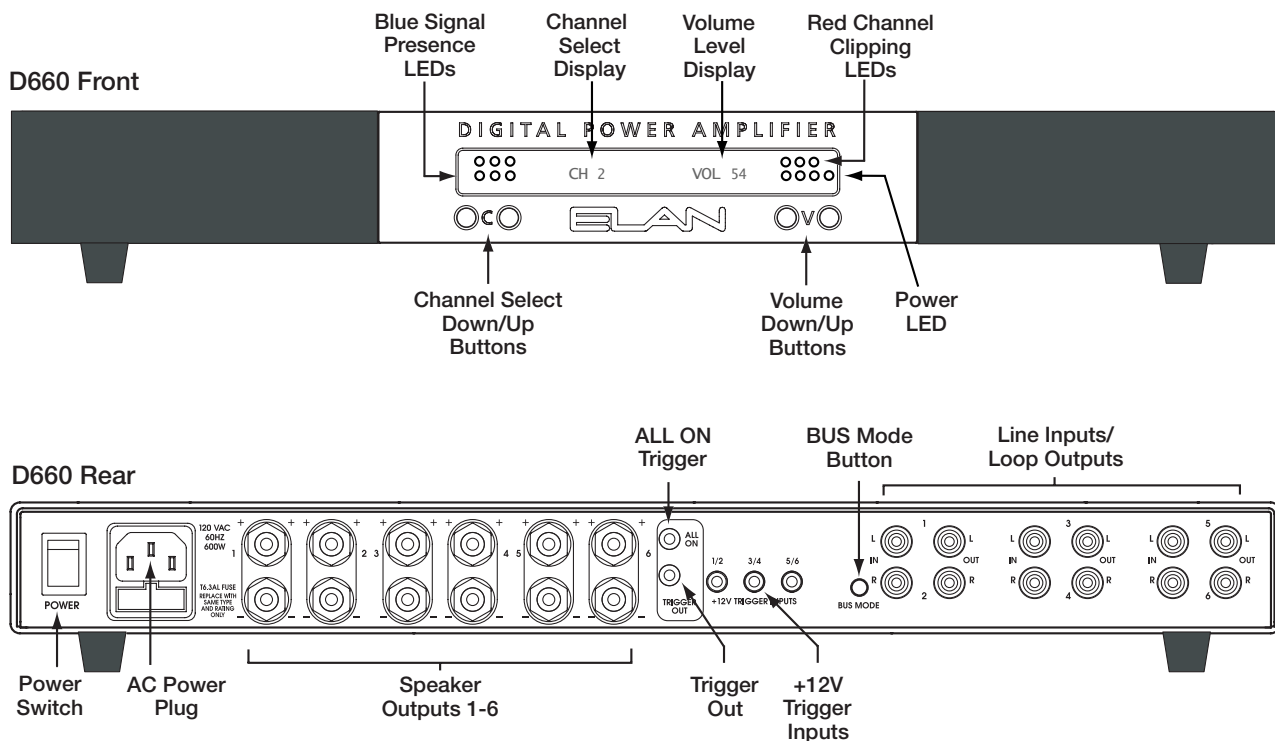


ALL CONNECTIONS SHOULD BE MADE WITH THE AMPLIFIER TURNED OFF AND UNPLUGGED FROM POWER. DAMAGE CAN OCCUR TO EQUIPMENT IF IMPROPER CONNECTIONS ARE MADE!



THIS AMPLIFIER IS NOT BRIDGEABLE! DO NOT TRY TO BRIDGE OR COMBINE OUTPUTS! DAMAGE TO THE AMP WILL OCCUR.

D660 Front/Rear



Specifications

Audio Section

Power Rating - RMS

Output Power (6 CH Stereo) 75WRMS @ 4 Ohms/Ch
 Output Power (6 CH Stereo) 60WRMS @ 8 Ohms/Ch

Frequency Response . 20Hz to 20kHz, +/-0.3dB into 8 Ohms

Full Power Bandwidth 10Hz to 50kHz

Signal-To-Noise > 102dB (A-weighted)

Channel Separation >70dB (channel to channel @1kHz)

Total Harmonic Distortion < .04%

Intermodulation Distortion < 0.1%

Voltage Gain (AV) Continuously Variable from 0 - 24

Slew Rate > 20V/microsecond

Input Impedance 49k Ohms

Input Sensitivity 0.790VRMS (45W @8 Ohms)

Connectors

Input/Loop Outputs Gold RCA Phono

Speaker Output Five-Way Binding Posts

Power

AC Power Requirements 120 VAC, 600 Watts

Current Draw 5A@120 VAC

Power Supply Ultra-High Efficiency Toroidal Transformer

Triggers

Remote Trigger Inputs 5 to 24 Volts AC/DC

Trigger Loop Output +12VDC @0.1A

Dimensions/Weight

Dimensions (Shelf-Mount) 17"(W) x 1¾"(H) x 15"(D)

43.18cm(W) x 4.46cm(H) x 38.10cm(D)

Rack Face 19"(W) X 1¾"(H)

48.26cm(W) x 4.46cm(H)

Weight 22lbs/48kg

Features

'Class-T' Design

'Class-T' Digital Technology allows the D660 to deliver its full rated power from all six channels simultaneously and is 85% efficient so that the amplifier does not waste energy producing excessive heat.

ACE™ (Automatic Clip Eliminator)

Microprocessor-controlled dynamic leveling circuit eliminates clipping without audio degradation typical with traditional compressor-based clipping circuits. Each amplified output is continuously monitored for signal clipping. Extremely fast transients are ignored but if ACE sees a consistent clipping trend, it turns the respective channel down by one increment. This action is repeated until no more clipping is detected. Once clipping is absent for five seconds, ACE will slowly and unnoticeably begin to restore the original gain settings. This translates into accurate, high quality audio reproduction at all volume levels.

Vacuum Florescent Display

Channel and Volume settings are displayed on a blue vacuum fluorescent display. Blue Signal Presence LEDs show when audio is present on each input. Red Clipping LEDs indicate distortion, and make fine tuning the amplifier very straightforward. The Signal Level and Power LEDs feature adjustable brightness.

Digital Level Set/Lockout

All channel levels are matched to within 0.3dB, making setup easy, accurate, and repeatable. Level settings are stored within the D660's non-volatile memory upon exiting setup. This means that settings are preserved even when a power outage occurs.

A special multi-button key press can be used to lock the volume settings so that they can not be tampered with. The user may view their settings when the system is locked, but is unable to change them.

Advanced Amplifier Protection

Each channel of the D660 is coupled to its respective modular speaker terminal via a high-power relay. If the processing circuitry senses a fault condition (over heating, shorted output, etc.), it will completely disconnect the amplifier channel from the output load. Faulted conditions will be indicated on the front panel display. After powering down and finding and correcting the cause of the fault condition, the D660 will resume normal operation upon power up.

Single Rack Height Design

The D660's single rack height design uses space very efficiently while still producing an abundance of power.

'Class-T' Digital Technology

Explained

The ultimate objective of any audio amplifier design is to make a high fidelity amp with high efficiency and high reliability. There are several basic audio power amp topologies that have been developed to attain these objectives: **Class-A**, **Class-B**, **Class-AB**, **Class-H**, **Class-G** and **Class-D** are the most common. The D660 utilizes proprietary **Class-T** topology from Tripath™. **Class-T** combines the best attributes of several of these designs and minimizes deficiencies in each design, as well.

Class-A, **Class-B** and **Class-AB** amps have been around for over fifty years. Basically, these classifications designate the amount of time that the amp's output devices conduct during one full cycle of a periodic signal. Class-A amps are in a state of conduction 100% of the time. Class-B amps have a complimentary pair of outputs, which are biased so that each output is conducting only 50% of the time. Class-AB amps also have complimentary output pairs but they are biased so that each output is conducting slightly more than 50% of the time: this lowers crossover distortion. The vast majority of audio amps in use today are Class-AB. A well-designed Class-AB amplifier has good linearity (high fidelity) and poor efficiency (less than 50%). **Class-H** and **Class-G** are both voltage-supply varying techniques which are usually applied to Class-AB type, linear amplifiers. These techniques give marginal improvement in efficiency at the cost of a more complex and less reliable power supply.

Class-D amplifiers use output devices which switch on and off at a fixed frequency. This frequency is usually more than ten times higher than the highest frequency to be amplified. A passive filter reconstructs the wave form passing through the amplifier and removes switching artifacts that distort sound. Class-D amplifiers use output devices that are either ON or OFF; never in a state of mid-conduction. This mid-conduction state is what causes linear switching amplifiers to be as inefficient as they are (less than 50% efficiency). Class-D amplifiers are approximately 85% efficient: a 35% increase!

As mentioned, each of these amplifier designs has drawbacks. Class-D amps have tendencies toward high distortion rates. Crossover distortion, ground bounce, and high frequency artifacts create most of the distortion in these designs. Imperfectly matched transistors lead to inexact

ON/OFF timing results and crossover distortion issues. Ground Bounce caused by high-current switching of the output transistors manifests itself as noise on the audio output. In some Class-D amplifiers, this high-frequency noise is not completely filtered out, resulting in high frequency distortion.

Advantages of Class-T Design

Class-T is a combination of Adaptive Digital Signal Processing and Spread-Spectrum Switching. This design takes the efficiency of a Class D amp and combines it with the fidelity of a Class AB amplifier by dramatically improving signal integrity.

Class-T offers the following improvements over Class-D:

1. Class-D has a fixed output switching frequency. Class-T has an adaptive switching frequency which is dependent upon both input signal frequency and magnitude. Switching artifacts are removed in this way, reducing distortion. The switching signal is constantly being optimized to match the input signal in order to yield the highest possible fidelity.
2. Class-D amplifiers have nominal switching frequencies between 200kHz and 300kHz which creates artifacts in the 20 to 50kHz audio band. This can be heard as audible noise. Class-T amplifiers have nominal switching frequencies between 600kHz and 700kHz; artifacts from this frequency are not audible.
3. Class-T design constantly monitors the output transistors and adaptively corrects for variations between and within these transistors. The Class-T design also monitors and corrects for ground bounce that the transistors produce when switching large currents.
4. Typical power efficiency with a Class-T amplifier is 85% (unreachable by Class-AB amps). Typical THD + Noise is less than 0.04% (unreachable by Class-D amps.) Truly the best of both worlds!

2. Connections & Applications

Multi-Room Applications

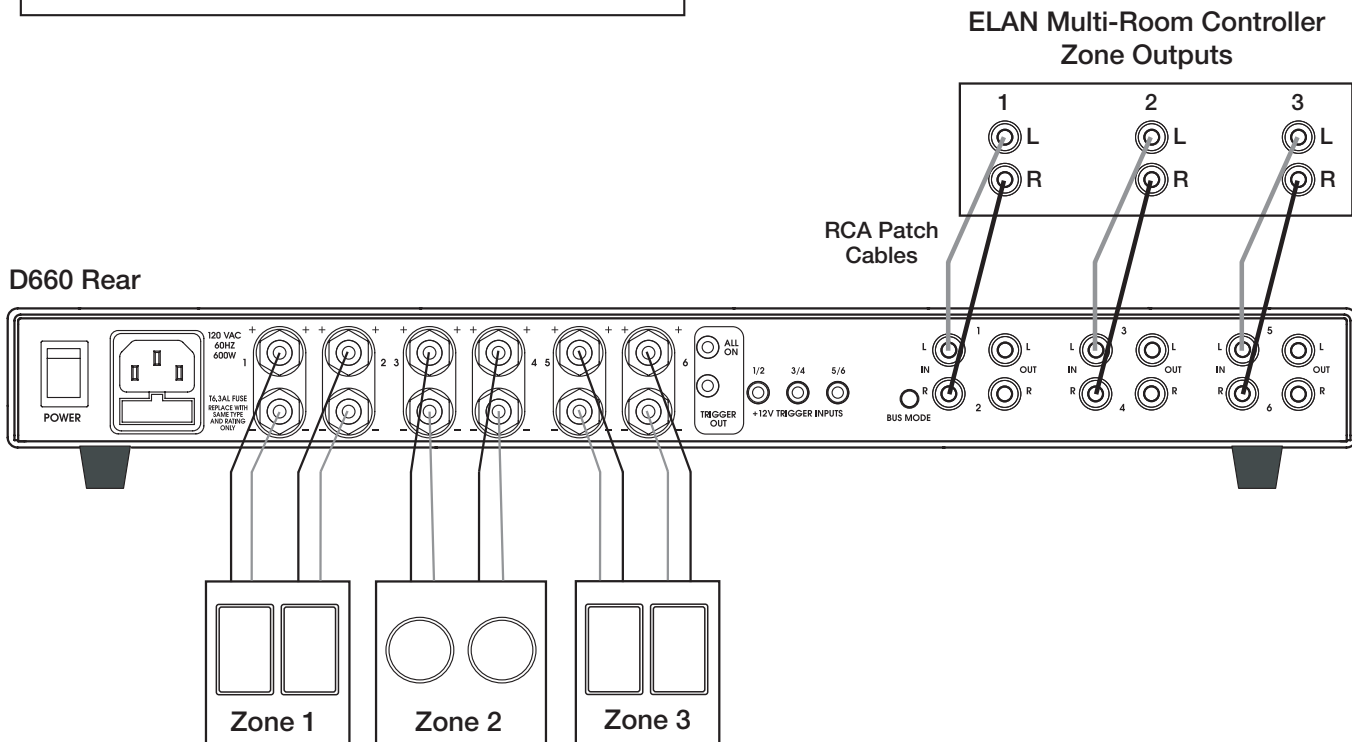
The D660 is specifically designed for multi-room applications. Virtually every feature was selected to enhance the multi-room experience and simplify the multi-room installation. With cool-running Class-T Digital Technology, Buffered Loop Outputs, and advanced Trigger options, the D660 can be customized for even the most complex systems.

Independent Stereo Zones

The D660 is set up to easily power three independent stereo zones right out of the box. This is the standard configuration for most multi-zone audio distribution systems. In the drawing below, each pair of speakers will have independent volume control.

WIRING CONSIDERATIONS

Speaker Wires	14-18 AWG Speaker Wire
Audio Cables	RCA Type Patch Cables
Triggers	2 Conductor Wire w/ Mono Mini-Plug

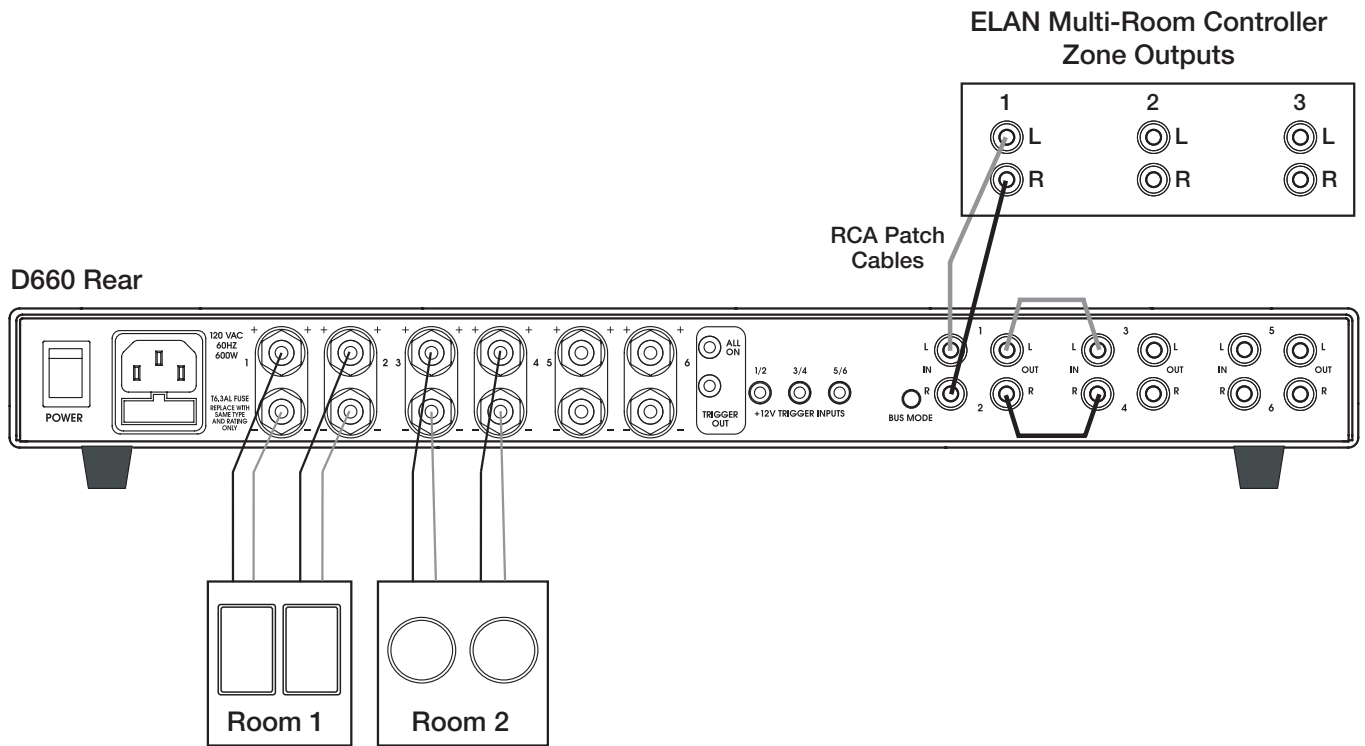


Three Independent Stereo Zones

- Zone 1 Output to Line Inputs 1 & 2
 - Zone 2 Output to Line Inputs 3 & 4
 - Zone 3 Output to Line Inputs 5 & 6
- Independent Volume for Each Zone's Speakers

Two Room Stereo Zone

By using the D660's Buffered Loop Outputs, an additional pair of speakers can be added to a zone. In this example, both pairs of speakers will ramp volume up and down simultaneously.



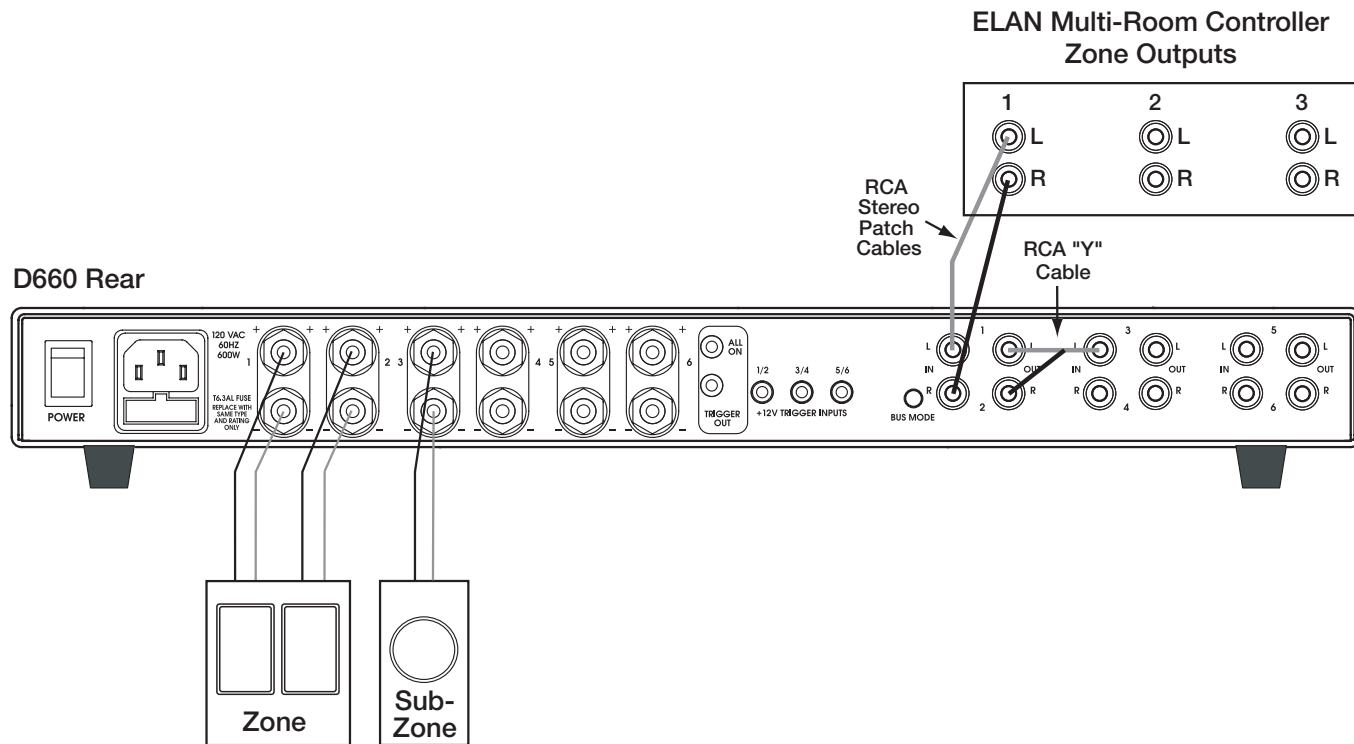
Two Room Stereo Zone

- Zone 1 Output to Line Inputs 1 & 2
- Line Outputs 1 & 2 to Line Inputs 3 & 4

All Speakers Volume Ramps Up/Down Together

Stereo Zones w/ Mono Sub-Zones

Use the Loop Out Jacks and an RCA 'Y' cable to create Mono sub-zones within Stereo zones. This application is perfect for large rooms with smaller rooms attached such as a Master Bedroom/Master Bath or Kitchen/Laundry Room.



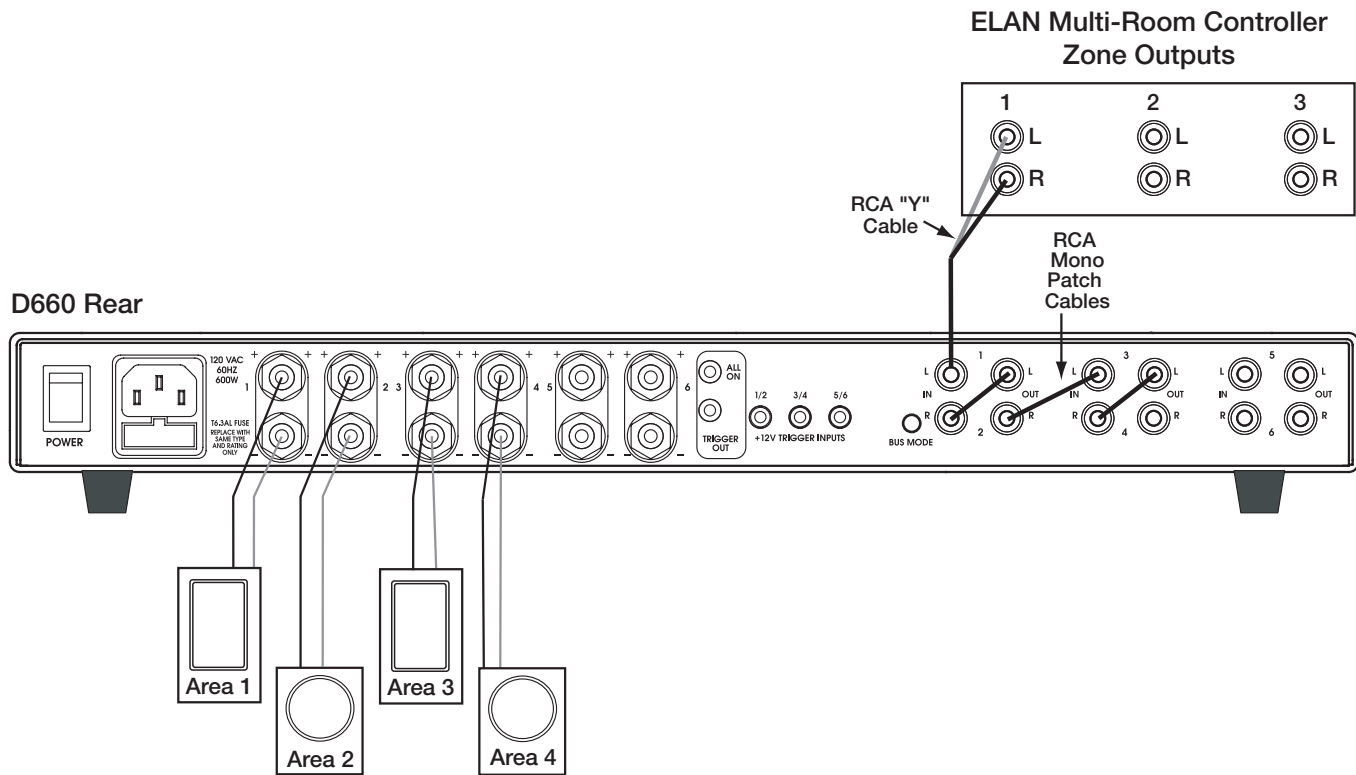
Stereo Zone w/ Mono Sub-Zone

- Zone 1 Output to Line Inputs 1 & 2
- Line Outputs 1 & 2 to RCA 'Y' Cable
- RCA 'Y' Cable to Line Input 3

All Speakers Volume Ramps Up/Down Together

Mono Zones

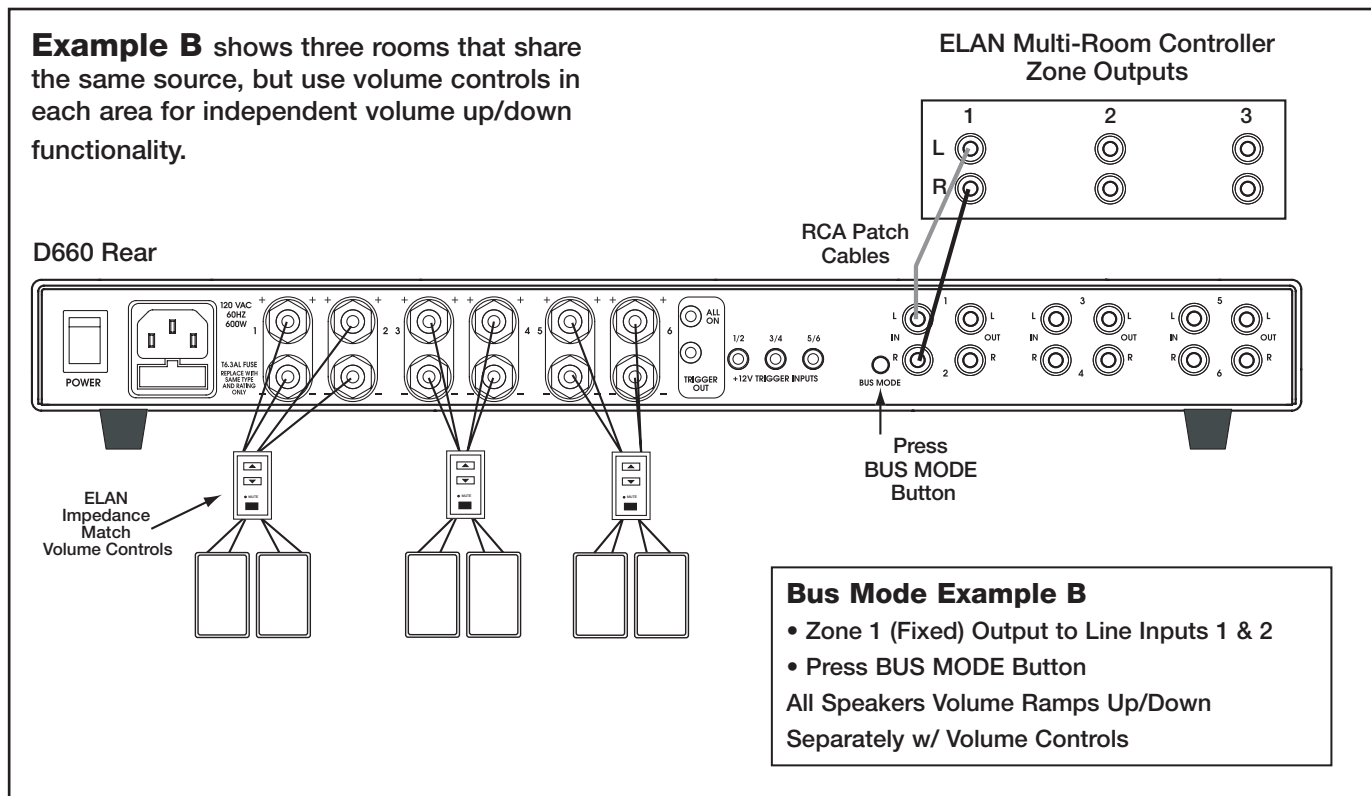
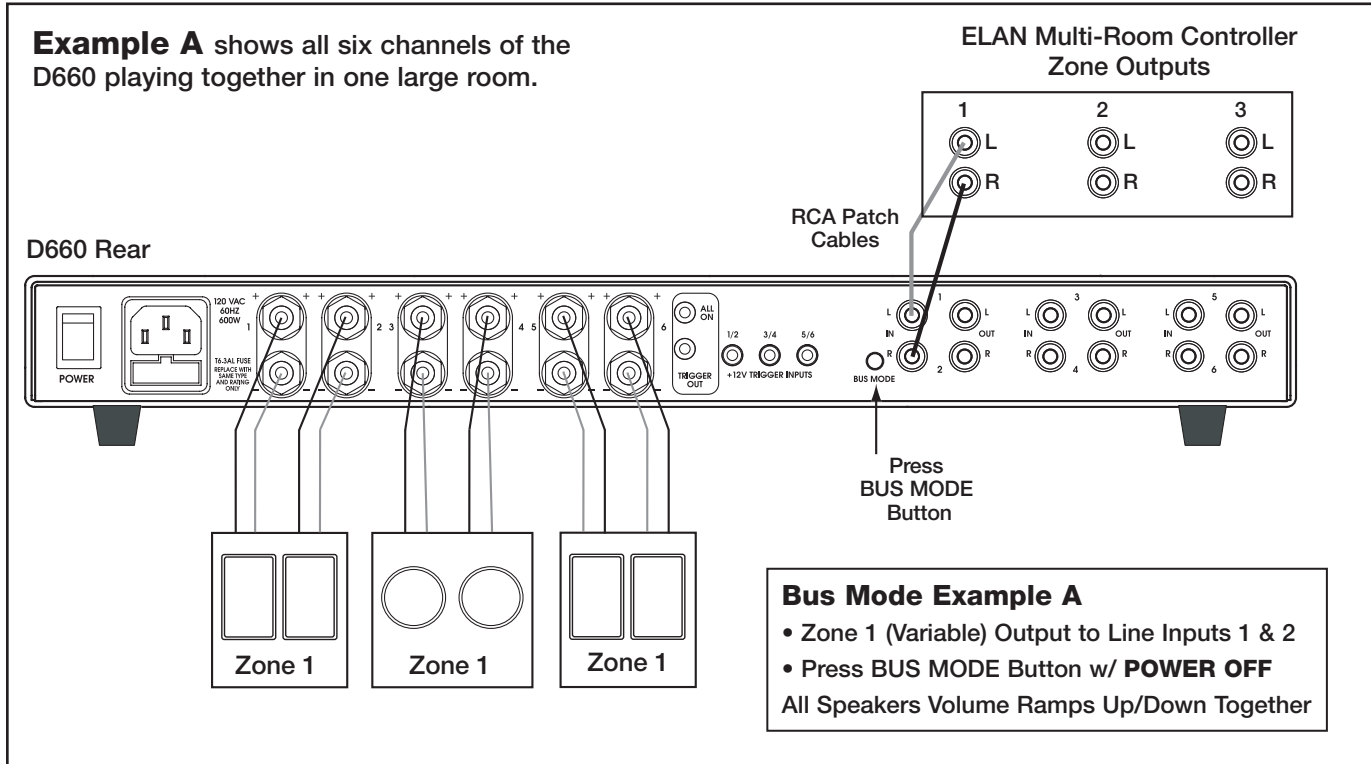
Use mono zones in areas where there is no distinct, stationary listening area such as hallways, L-shaped rooms, kitchens, and outdoor areas. The use of mono zones also increases the capacity of the amplifier...up to six mono areas can be powered from one D660. In this example, four channels of the D660 are configured in mono to power four speakers.



- Four Room Mono Zone**
- Zone 1 Output to RCA 'Y' Cable
 - RCA 'Y' Cable to Line Input 1
 - Line Output 1 to Line Input 2
 - Line Output 2 to Line Input 3
 - Line Output 3 to Line Input 4
- All Speakers Volume Ramps Up/Down Together

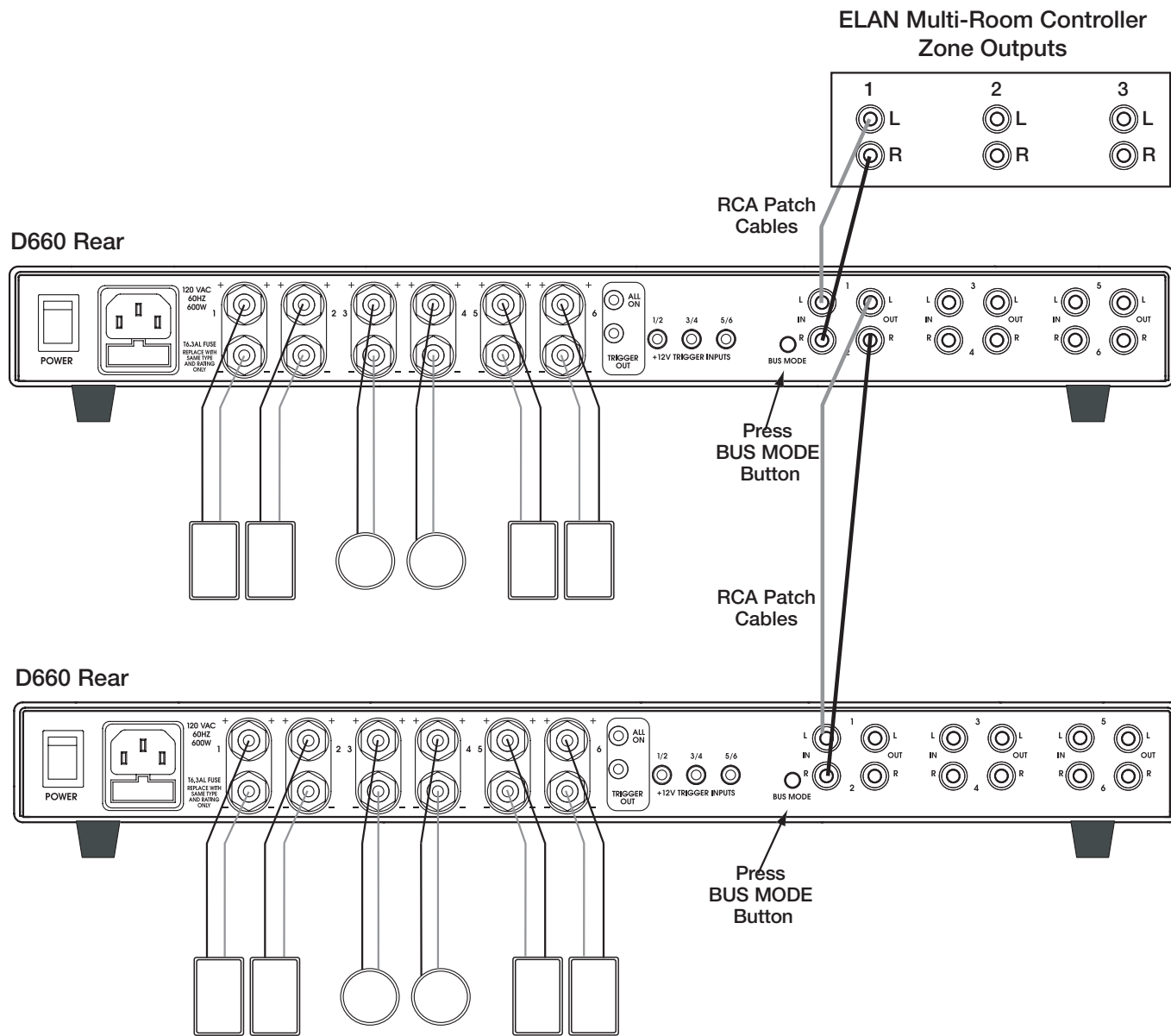
Bus Mode

With **Power OFF**, Press the **BUS MODE** button on the rear on the amplifier to cause each Output to be linked to Inputs 1 and 2. Outputs 1, 3, and 5 each play the signal that is being fed to Input 1. Outputs 2, 4, and 6 each play the signal that is being fed to Input 2. **Example A** shows all six channels of the D660 playing together in one large room.



System Expansion

ELAN Engineers had flexibility and system expansion in mind when they designed the D660. To add additional stereo rooms or zones to a basic system, simply add another D660. To expand zones or subzones to include more than six channels of amplification, use the Buffered Loop Outputs to send audio to additional D660s or other amplifiers.



System Expansion

- Zone 1 Output to Line Inputs 1 & 2 of D660 #1
- Line Outputs 1 & 2 to Line Inputs 1 & 2 of D660 #2
- Press BUS MODE Button on Both Amps

All Speakers Connected to Both Amps Volume Ramps Up/Down Together

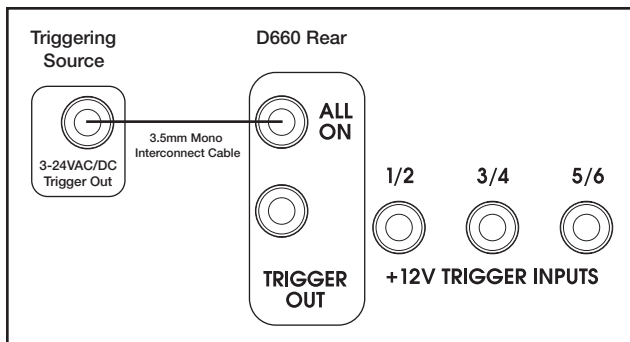
Triggers

Each channel pair of the D660 has its own Remote Turn On/Muting circuit. Individual channel pairs can be turned on or muted independently of any others. An "ALL ON" port allows all channels to turn on and mute simultaneously. The Front Display of the D660 will show "M" next to the channel number when a channel is in Mute.

The TRIGGER OUT can be used to turn on other equipment, additional D660s, or to perform automated functions desired by the user.

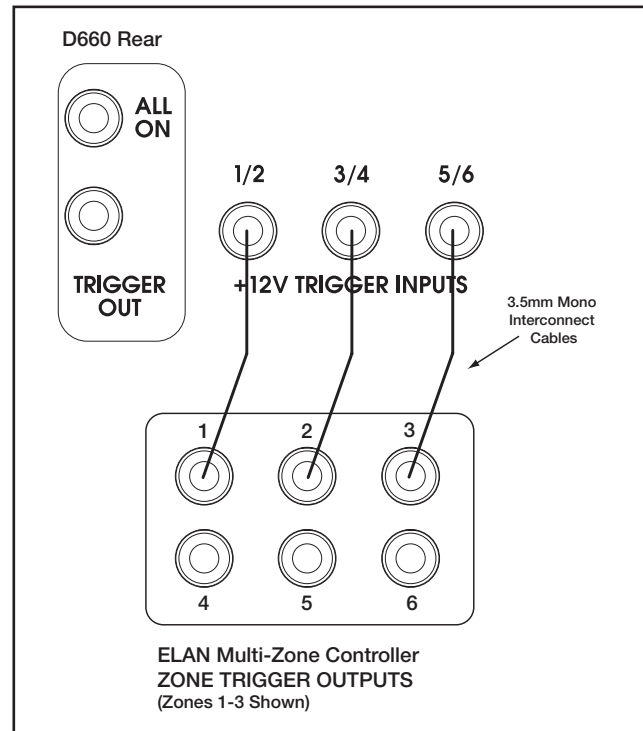
ALL ON

To Mute/Un-Mute all channels simultaneously, simply connect a system-wide 3-24 Volt AC or DC Triggering Source to the ALL ON Trigger Input using a 3.5mm mono interconnect cable. Examples of triggering sources include an ELAN Multi-Zone Controller's SYSTEM TRIGGER OUT or REMOTE OUT, an A/V receiver's switched outlet connected to a power supply, or a TRIGGER OUT from another ELAN D Series amplifier.



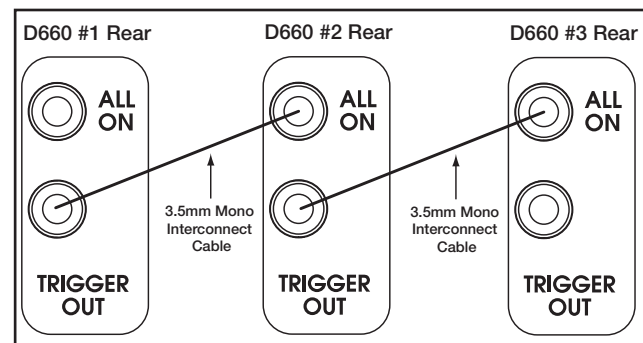
Specific Stereo Pair Triggers

To Mute/Un-Mute specific pairs of channels, a zone-specific Triggering Source can be used. As in the ALL ON example, any 3-24 Volt AC or DC source may be used to trigger these specific inputs. This application gives additional control in advanced systems. Examples include: Zone Specific Trigger Outputs from an ELAN Multi-Zone Controller, multiple A/V Receivers triggering separate D660 inputs, or outboard sensors located in certain areas to trigger specific inputs of the D660.

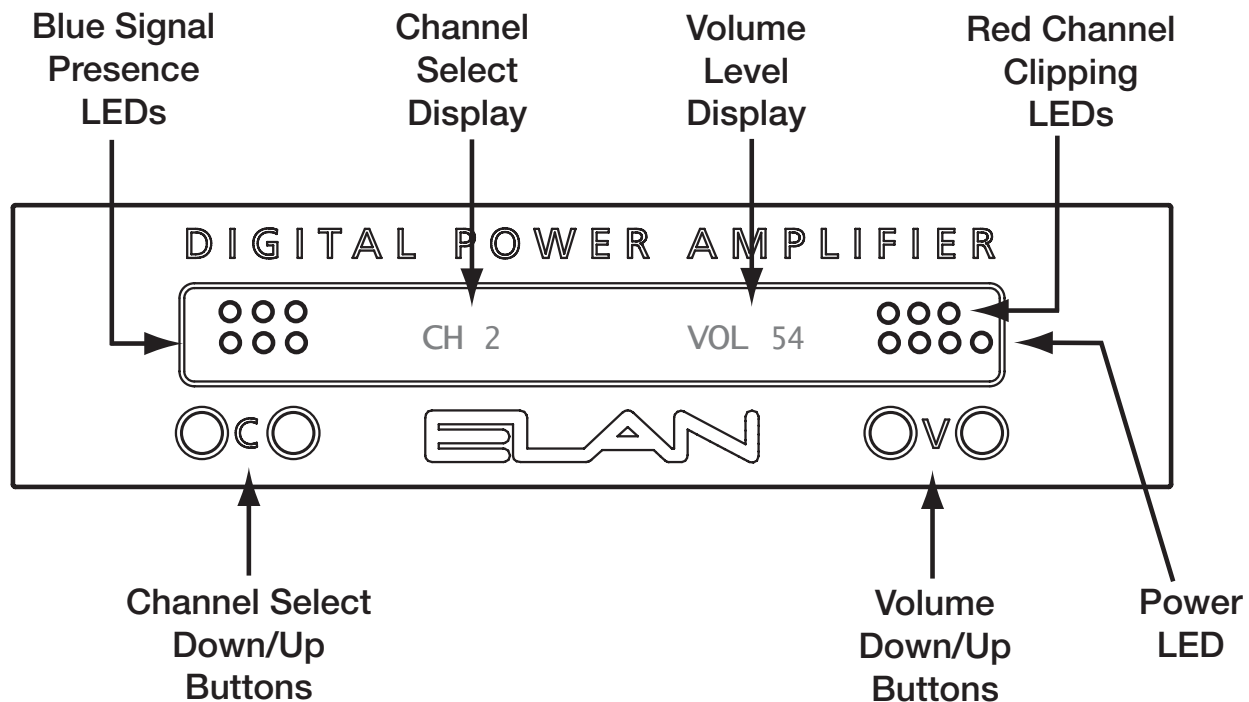


TRIGGER OUT

Whenever the D660 comes out of **Standby**, the TRIGGER OUT becomes active. As the name implies, this output sends a +12V 100mA signal to other devices with a Trigger Input. Examples of proper usage of the TRIGGER OUT include muting/un-muting another D Series amplifier, triggering the switched outlets of a Z•Power Controller, or triggering an IR sequence using VIA!® products.



**TRIGGER INPUTS
ACCEPT
3 TO 24 VDC**



Setting Channel Levels

Each amp channel can be individually adjusted from the front panel. Pressing the **C** button will cycle through all the amp channels — both Left and Right channels can be adjusted independently. The **C** button to the left cycles downward, the one on the right cycles upward. When the desired channel is displayed on the front panel, use the **V** buttons to adjust the level for the selected channel. The **V** button to the left lowers the volume, the one on the right raises the volume. Factory Default is 50.

Set the levels by first lowering them all the way down, then raise the volume of any keypads or volume controls to maximum. Slowly adjust Volume Up for this channel until the red clipping LEDs begin to light up, then drop the level one or two steps. Follow this procedure for all channels.

Protection Mode

Should the D660 encounter a potentially damaging situation (impedance too low, gain too high, dead short on speaker leads, etc.) it will go into Protection Mode. The front display will read “E” (for Error) next to the channel number. If this occurs, turn off the amp, correct the problem that is causing the Error condition, then turn the amp back on.

Lockout Mode

The Lockout feature is designed to disable level adjustment functions. Use this feature once the system is fine-tuned and ready to go. By locking the D660’s front panel, level adjustments cannot be inadvertently changed.

To Place the D660 in Lockout Mode:

1. With the Front Display dark, Press C- and V- simultaneously.
2. Continue pressing C- and V-. The Front Display will show the Volume setting momentarily.
3. Four seconds later, the Front Display will read “L” next to the channel number. Release the buttons.
4. Follow the same procedure to Unlock the amp.

Please Note: If the user tries to change settings while in Lockout Mode, the Front Display will show “L” next to the Channel number.

Volume Adjustment

Considerations w/ACE™

Automatic Clip Eliminator

ACE automatically adjusts the D660's levels downward when it senses a clipping condition. If audio is playing and the amplifier is clipping (ACE is performing it's function), ACE will override Volume Up functionality and turn the amplifier levels back down. Volume Down functionality remains.

To save levels at the point where ACE sets them, Press the Volume Down button. The new levels will be saved when the display times out.

Factory Default

When your D660 arrives, it is set to a FACTORY DEFAULT condition. At some point during the life of this amplifier it may be necessary to put the unit back into Factory Default mode. If this unit is moved to a different location or speaker type or load are changed, the FACTORY DEFAULT procedure should be used:

1. Turn the D660 OFF using the rear Power Switch.
2. Turn the unit back ON. The Front Display will read **ELAN**.
3. Press and hold **C+**, **C-**, **V+**, and **V-** (all the front panel buttons at once) while **ELAN** is displayed.
4. The Front Display will now read "**FACTORY DEFAULT**".

The Factory default settings are:

- All channels Volume defaults to 50.
- Lockout feature is Disabled.

Display Brightness Levels

The blue Signal and Power LED brightness levels on the Display can be increased or decreased from the Front Panel. Press and hold **C+** and **V+** to cycle between High, Low, and Off. The Red Clipping LEDs cannot be adjusted.

4. Troubleshooting

SYMPTOM	CAUSE	SOLUTION
No Audio From One or More Channels	1. Loose/Bad Speaker Cable Connection	Check Cable Ends at Binding Posts and Speaker Terminals
	2. Break/Short in Speaker Cable	Check Continuity of Each Speaker Cable Using Multimeter. If Short or Open is Indicated, Check Wiring for Proper Connections.
	3. Speaker is defective	Swap with Known Good Speaker
	4. RCA Patch Cable Defective	Swap with Known Good Patch Cable.
	5. Source not Sending Audio	Verify Source is Powered Up and Playing. Check any Tape Monitor Settings on A/V Receiver.
"M" Flashes on Display, then Volume Setting	Channel is in MUTE	Make sure triggering device's remote output is connected and producing voltage.
"E" Displayed Next to Channel Number on Front Panel	Amplifier in Protection Mode	Find short or low-impedance condition. Correct overheating or AC power issues. Once issue is found and resolved, cycle power to D660. This condition could be caused by 1, 2, 3, or 4, above.
Audio "Hum"	1. Ground Potential Difference Between Source Components (Ground Loop)	Make Sure Amp Shares Common Ground w/Source Gear.
		Test AC Outlet Using Ground Tester.
	2. Faulty/Damaged Cables	Check Source Equipment Cables For Damaged Cables and Faulty Connections.
	3. Faulty Wiring	Make Sure Any Volume Controls Are Not Hooked Up Backwards.
Check for Shorts in Wiring (See item 2 in "No Audio...")		
Distorted Audio at Normal Volume Levels	1. Input Gain Too High	Reduce Gain to the Channel in Question. Ensure Red Clipping LEDs are not Pulsing or On Constantly.
	2. Defective/Incompatible Speaker	Check for Physical Damage to Speaker
		Check Power Ratings on Speaker Do Not use Speakers Rated for Less than 60 Watts RMS.
3. Volume Control Miswired	Check for Proper Input/Output connections at Volume Control. INPUT Comes from Amplifier, OUTPUT Goes to Speakers.	

Troubleshooting (cont.)

SYMPTOM	CAUSE	SOLUTION
Audio is Unclear, Bass Response Low	Speakers Out of Phase	Verify that + of Amplifier goes to + of Speaker (and – to –) on ALL Speaker Leads.
Incorrect Source Playing on Speakers	1. BUS Mode Button Depressed	Make sure BUS Mode Button is in Correct Position.
	2. Source Connected to Wrong Input of Amplifier	Verify Source Input Connections.
	3. Speakers Connected to Wrong Speaker Outputs	Verify Speaker Connections.
Amplifier Will Not Power Up	1. Power Switch is OFF	Turn it ON. Switch is Located on Back of Unit.
	2. Circuit Breaker Tripped	The D660 Requires 5 Amps of 120VAC Current. Ensure that the Combined Current Draw of All Devices on a Circuit Does Not Exceed the Circuit's Capacity.
	3. Remote Turn-On Miswired	Ensure That Any Remote Turn On Cables are Connected At Both Ends. A Cable Plugged into the D660 Remote In, But Not Connected to a Source's Remote Out will Remain in Mute Mode.
Audio Very Distorted in Areas Using Volume Controls	1. Impedance-Match Settings Incorrect	Set Impedance-Match Settings Correctly.
	2. Using Incompatible Volume Control	Use Volume Controls Rated for 60 Watts or Higher.
Hum in Speakers When Audio is Not Present	Ground Loop	Use Triggers to Mute Audio Inputs When Audio is Not Present



H O M E S Y S T E M S™

2428 Palumbo Dr.
Lexington, KY USA 40509

Voice 859-269-7760
Tech Support 800-622-3526
www.elanhomesystems.com

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Limited Warranty

ELAN HOME SYSTEMS L.L.C. ("ELAN") warrants the D660/D661 to be free from defects in materials and workmanship for the period of two years (2 years) from date of purchase. If within the applicable warranty period above purchaser discovers that such item was not as warranted above and promptly notifies ELAN in writing, ELAN shall repair or replace the item at the company's option. This warranty shall not apply (a) to equipment not manufactured by ELAN, (b) to equipment which shall have been installed by other than an ELAN authorized installer, (c) to installed equipment which is not installed to ELAN's specifications, (d) to equipment which shall have been repaired or altered by others than ELAN, (e) to equipment which shall have been subjected to negligence, accident, or damage by circumstances beyond ELAN's control, including, but not limited to, lightning, flood, electrical surge, tornado, earthquake, or other catastrophic events beyond ELAN's control, or to improper operation, maintenance or storage, or to other than normal use of service. With respect to equipment sold by, but not manufactured by ELAN, the warranty obligations of ELAN shall in all respects conform to the warranty actually extended to ELAN by its supplier. The foregoing warranties do not cover reimbursement for labor, transportation, removal, installation or other expenses which may be incurred in connection with repair or replacement.

Except as may be expressly provided and authorized in writing by ELAN, ELAN shall not be subject to any other obligations or liabilities whatsoever with respect to equipment manufactured by ELAN or services rendered by ELAN.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED AND IMPLIED WARRANTIES EXCEPT WARRANTIES OF TITLE, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

ATTENTION: TO OUR VALUED CONSUMERS

To ensure that consumers obtain quality pre-sale and after-sale support and service, ELAN Home Systems products are sold exclusively through authorized dealers. ***ELAN products are not sold online.*** The warranties on ELAN products are NOT VALID if the products have been purchased from an unauthorized dealer or an online E-tailer. To determine if your ELAN reseller is authorized, please call ELAN Home Systems at (859) 269-7760.



2428 Palumbo Drive Lexington, KY 40509

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P/N 9900664 REV: C

INSTR, INSTL, D660/D661
LINEAR P/N 9900664 REV: C
INK: BLACK
MATERIAL: 60 LB WHITE COATED PAPER
PAGES: 24 PAGES
SCALE: 1-1
SIZE: 17.000 X 11.000, TOL: +/- .040
FOLD TO 8.500 X 11.000
FOLDING: ALBUM FOLD CENTER STAPLE
NOTE: ARTWORK CREATED BY ELAN HOME SYSTEMS
ECN: 1613

