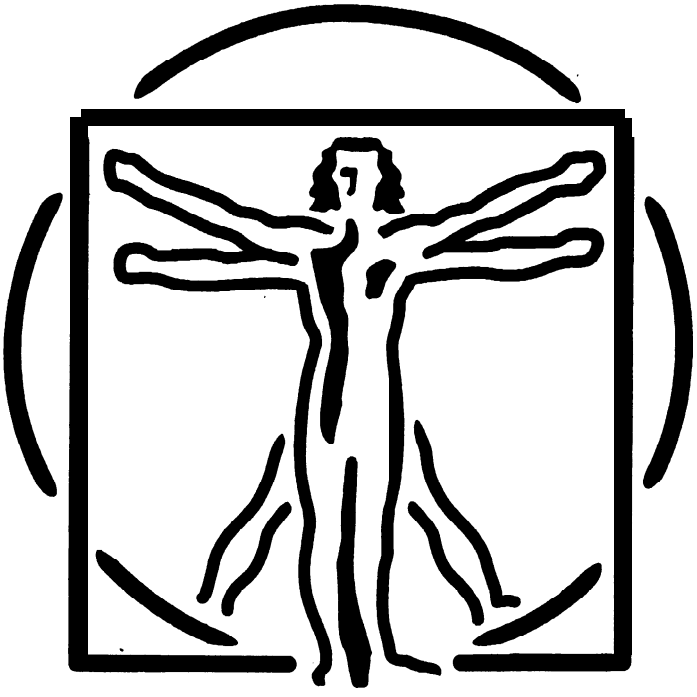


DAVINCI

# *Limited Edition Seven Channel Balanced Input Amplifier*

# OWNER'S MANUAL AND INSTALLATION GUIDE

SOUNDSTREAM®

TECHNOLOGIES

## ***CONGRATULATIONS!***

***You now own*** the ***Limited Edition DaVinci amplifier,*** the product of an uncompromising design and engineering philosophy. Your ***Limited Edition DaVinci amplifier*** will outperform any other amplifier in the world.

To maximize the performance of your system, we recommend that you thoroughly acquaint yourself with its capabilities and features. Please retain this manual and your sales and installation receipts for future reference.

Soundstream amplifiers are the result of American craftsmanship and the highest quality control standards, and when properly installed, will provide you with many years of listening pleasure. Should your amplifier ever need service or replacement due to theft, please record the following information, which will help protect your investment.

Serial **#** _____

Dealer's Name _____

Date of Purchase _____

Installation Shop _____

Installation Date _____

### ***CAUTION!***

*Prolonged listening at high levels may result in hearing loss. Even though your new Soundstream **Limited Edition DaVinci amplifier** sounds better than anything you've ever heard, exercise caution to prevent hearing damage.*

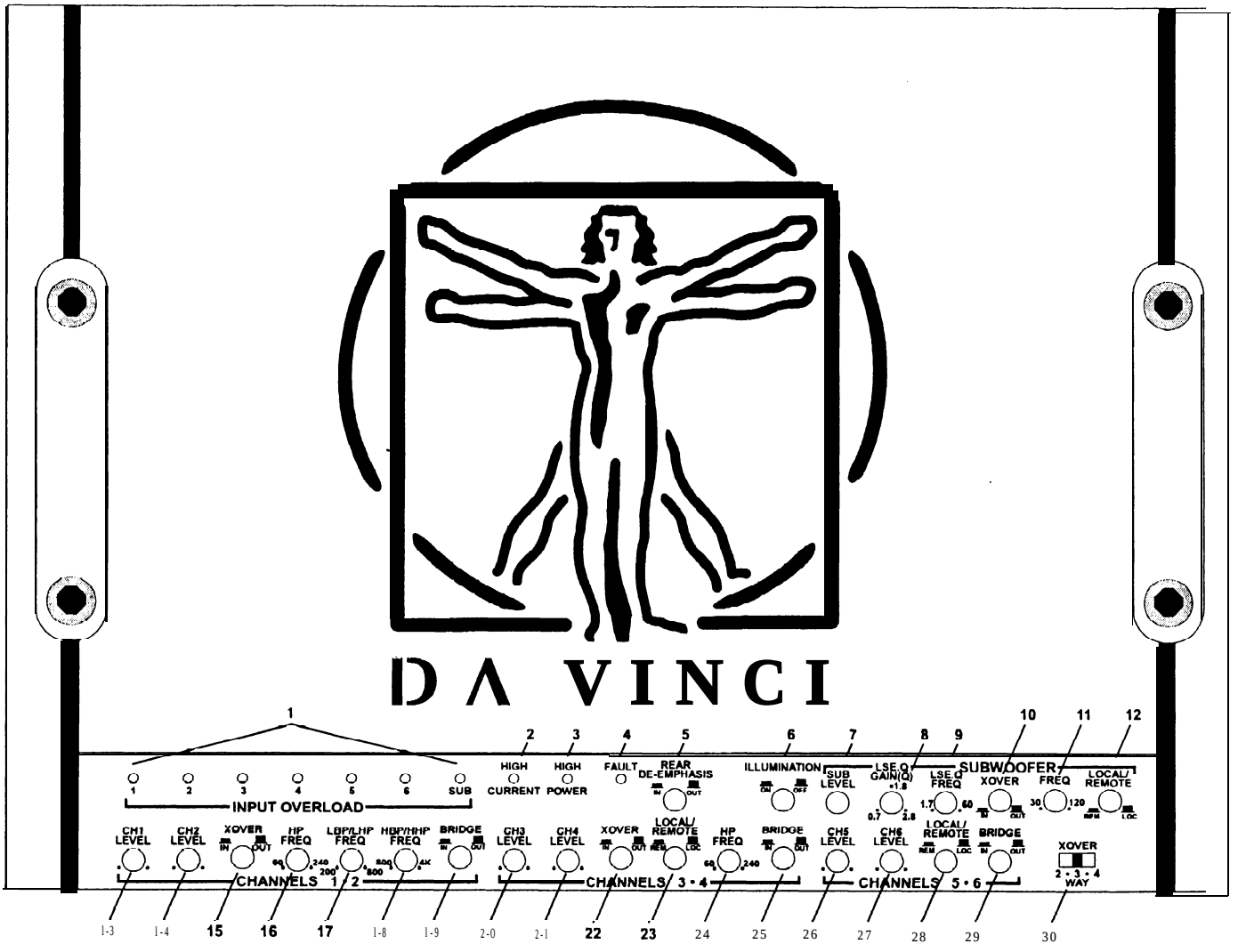
# TABLE OF CONTENTS

## *DESIGN FEATURES*

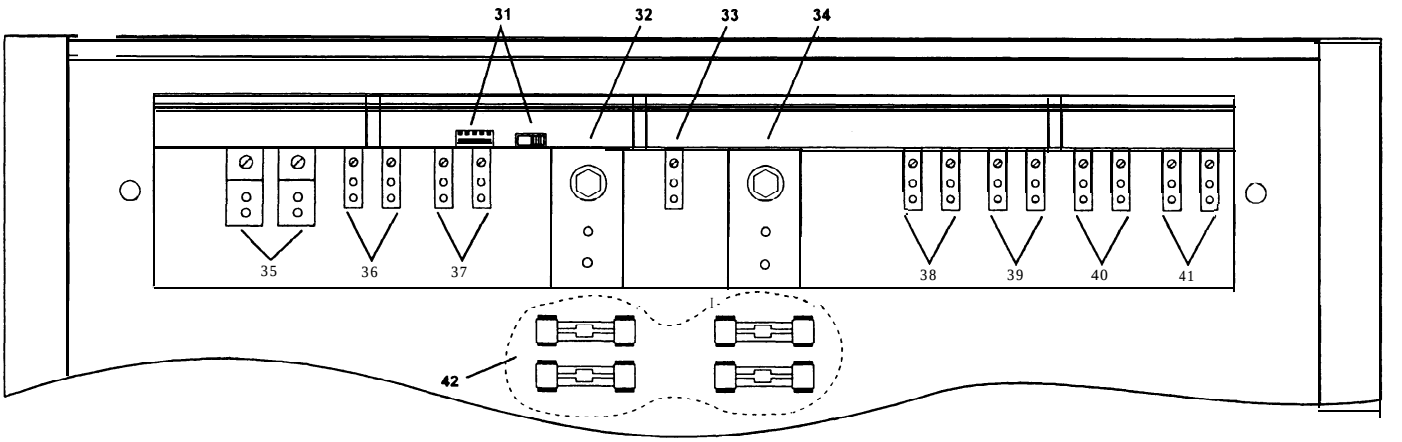
- **Uncompromising Design and Construction** including mil-spec glass epoxy circuit boards and high current, custom gold-plated, solid aluminum connections that will accept up to 1/0 gauge power/ground wire.
- ***Auto High Current*™** (subwoofer channel only) - Soundstream's exclusive circuit which automatically optimizes your amplifier to its particular application - High Current, low impedance loads (multiple subwoofers, less than 2 ohms) or High Power, higher impedance loads (2 ohms and up).
- **Continuously Variable Electronic Crossover -** Continuously variable 4, 3 or 2-way crossovers with 12 dB/octave high pass and bandpass filters, and a 24 dB/octave subwoofer low pass filter. The six non-subwoofer channels of the ***DaVinci*** amplifier can be used to drive almost any conceivable system!
- **Rear Channel De-emphasis -** In 2 or 3-way mode, Channels 3&4 of the ***DaVinci*** amplifier can be used for rear fill, and include a de-emphasis contour filter; a circuit based on theater surround technology in which rear fill information is rolled off at 6 dB/octave with a -3 dB point at 7,000 Hz to provide a more realistic listening experience.
- **PowerGrid™ Power Supply Design -** All power supply components are located near one another, for the shortest possible current path and are connected by thick, wide PCB traces, which ensure rapid, high current delivery.
- **Ultra-Low ESR Capacitance Bank** - Multiple miniature "stiffening" capacitors ensure rapid power delivery for dynamic peaks. Multiple small input power capacitors are used to provide a lower ESR (Equivalent Series Resistance), which means **more** power, faster.
- **Proprietary Vari-quiet™ Fan Cooling** - Internal Heat Sinking and thermostat controlled fan system maintain safe operating temperatures.
- **Smart Thermal Rollback™ -** Most amplifiers shut off when they get too hot. In the unlikely event the ***DaVinci*** amplifier reaches 85° C, it will gradually roll back its average power (without affecting the dynamics). Once the amplifier has cooled off, it returns to full power output. If overheating should continue, a second thermal sensing protection circuit will shut off the amplifier if the heatsink reaches 95" c.
- **Unregulated Power Supply - 4** ohm power ratings are measured at 12 volts, which means substantially greater output in the real world when the vehicle is running, where voltages range from 13.6 to 14.4 volts. Dynamic capability of the unregulated power supply is vastly greater than that of a tightly regulated power supply.
- **Fault Monitor LED** on the front panel notifies you of a blown power supply fuse.
- **1 Ohm Subwoofer Drive Ability -** The ***DaVinci*** subwoofer channel is designed to be stable into any impedance, down to 1 ohm.
- **Seven Dual Discrete Class A Drive Stages -** Over six times the drive current of most amps, which maximizes linearity into any load.
- **Drive Delay™ Muted Turn-on/off Circuit -** A unique circuit which completely eliminates amplifier-related turn-on/off noises.

- **Fully-Balanced Studio Quality Class A Inputs** with the Limited Edition BLT4™ 4-Channel Balanced Line Driver (included) for professional quality performance and noise cancellation. The 6-pin DIN plug carries (+) and (-) signal information for left and right channels, audio ground, and ±15 Vdc to operate the Soundstream BLT4™ Balanced Line Transmitter.
- **Flexible Input Sensitivity -** Variable input sensitivity controls for use with a balanced line transmitter, such as the Soundstream BLT4.
- **LSE.Q -** Fully adjustable subwoofer equalization circuit providing frequency and level "Q" adjustment for optimum subwoofer performance. A frequency tracking subsonic filter protects woofers from potentially harmful low frequency information and maximizes output in a usablerange.
- *AIR***BASS™ Upgradable -** This feature allows wireless remote control level adjustment of the subwoofer channel of the ***DaVinci*** amplifier.

# DaVinci




*FRONT PANEL*




*BOTTOM PANEL*

# Key to Callouts

1. **Input Overload Indicators -** Indicates the signal input level or input gain level is too high (Channels 1 through **7).**
2. **Auto High Current™ LED -** Indicates amplified subwoofer channel power on in "High Current" mode.
3. **High Power LED -** Indicates amplified subwoofer channel power on in "High Power" mode.
4. **Fault LED -** Indicates a blow power supply fuse.
5. **Rear Fill De-Emphasis -** Select "IN" to engage the 6 dB/ octave low pass filter at 7 kHz on Channels 3&4 (2 or 3 way modes only).
6. **Illumination -** Turns on and off the back lighting behind the ***DaVinci*** icon (Vitruvian Man).
7. **Input Level -** Subwoofer channel level control.
8. **LSE.Q Gain(Q) Control -** Adjustment for the filter Q (Boost) for the LSE.Q sub-sonic protection circuit.
9. **LSE.Q Frequency Control -** Adjustment for the high pass filter frequency for the LSE.Q sub-sonic protection circuit.
10. **Subwoofer Channel Crossover Switch -** Select "IN" for use with the internal crossover, or "OUT" for use with an external crossover.
11. **Low Pass Crossover Adjustment Pot -** Subwoofer channel; crossover frequency setting for the internal low pass filter.
12. **Subwoofer Channel Input Select -** Select "REM" for inputs from remote inputs (internal link to Channels 1 through **4),** or "LOC" for the local subwoofer channel input.
13. **Input Level -** Channel 1 independent level control.
14. **Input Level -** Channel 2 independent level control.
15. **Channel 1&2** *Crossover* **Switch -** Select "IN" for use with the internal high pass filter, or "OUT" for use with an external crossover or full range operation.
16. **High Pass Crossover Adjustment Pot -** Channels 1&2; crossover frequency setting for the internal high pass filter. This filter applies to Channels 1&2 in 2-way mode, Channels 5&6 remote input in 2-way mode, or Channels 5&6 high pass in **3** and 4-way mode. (See the ***DaVinci*** **flow** chart diagram and system diagrams on pages 17 and 18 for a more detailed explanation.)
17. Low ***Range*** **Band Pass / High Pass Crossover Adjustment Pot -** Channels 1&2; crossover frequency setting for the internal low range band pass / high pass filter. This filter applies to Channels 1&2 satellite high pass filter in 3-way mode, Channels 3&4 midrange high pass filter in 4-way mode, and Channels 5&6 midbass low pass filter in 3 and 4-way modes.
18. ***High Range*** **Band Pass / High Pass Crossover Adjustment Pot -** Channels 1&2; crossover frequency setting for the internal high ***range*** band pass / high pass filter. This filter applies to Channels 1&2 tweeter high pass filter in 4-way mode and Channels 3&4 midrange low pass filter in 4-way mode.
19. **Bridge Mono Switch -** Channels 1&2; Select "IN" for bridged mono operation (right channel balanced input is only used.). Select "OUT" for Coherent Stereo™ operation,
20. **Input Level -** Channel 3 independent level control.
21. **Input Level -** Channel 4 independent level control.
22. **Channel 3&4 Crossover Switch -** Select "IN" for use with the internal high pass filter, or "OUT" for use with an external crossover or full range operation.
23. **Channel 3&4 Input Select -** Select "REM" for inputs from remote inputs (internal link to Channels 1&2), or "LOC" for the local Channel 3&4 input.
24. **High Pass Crossover Adjustment Pot -** Channels 3&4; crossover frequency setting for the internal high pass filter. This filter applies to Channels 3&4 only in 2 and 3-way modes.
25. **Bridge Mono Switch -** Channels 3&4; Select "IN" for bridged mono operation (right channel balanced input is only used.). Select "OUT" for Coherent Stereo operation.
26. **Input Level -** Channel 5 independent level control.
27. **Input Level -** Channel 6 independent level control.
28. **Channel 5&6 Input Select -** Select "REM" for inputs from remote inputs (internal link to Channels 1&2), or "LOC" for the local Channel 5&6 input.
29. **Bridge Mono Switch -** Channels 5&6; Select "IN" for bridged mono operation (right channel balanced input is only used.). Select "OUT" for Coherent Stereo operation.
30. **2-Way / 3-Way Crossover Switch -** All Channel operation. Select 2-way for standard subwoofer satellite operation. select 3-way for midbass / satellite operation on the front channels. Select 4-way operation for midbass / midrange / tweeter operation on the front channels.
31. *AIR***BASS™ Connector and Switch -** Optional *AIR***BASS** subwoofer level control connector and input switch.
32. GND - Main ground connection. Bolt to a clean chassis ground in the vehicle.
33. **REM** - Remote turn-on input from the head unit. Accepts +12 V.
34. **+12V -** Connected to a fuse or circuit breaker, then to the battery's positive post.
35. - 41. **Speaker Connections** - Channels l-6 and subwoofer speaker connections.
42. **Main Fuses -** Main power supply fuses.

# Limited Edition BLT4

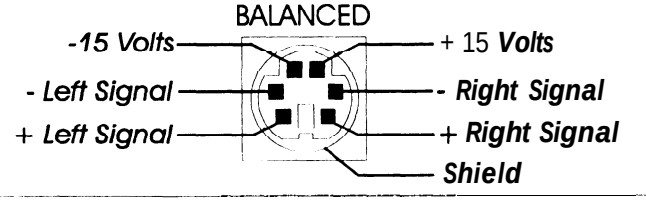
## *BALANCED INPUT*

The ***DaVinci*** amplifier utilizes professional quality true balanced line audio inputs for maximum fidelity and noise cancellation. Supplied with the ***DaVinci*** is a Limited Edition BLT4 Balanced Line Transmitter, finished in the same 24 karat gold as the ***DaVinci.*** The BLT4 converts an unbalanced signal (standard RCA output from a head unit) to a **True Balanced Audio** signal, with all its features and benefits.

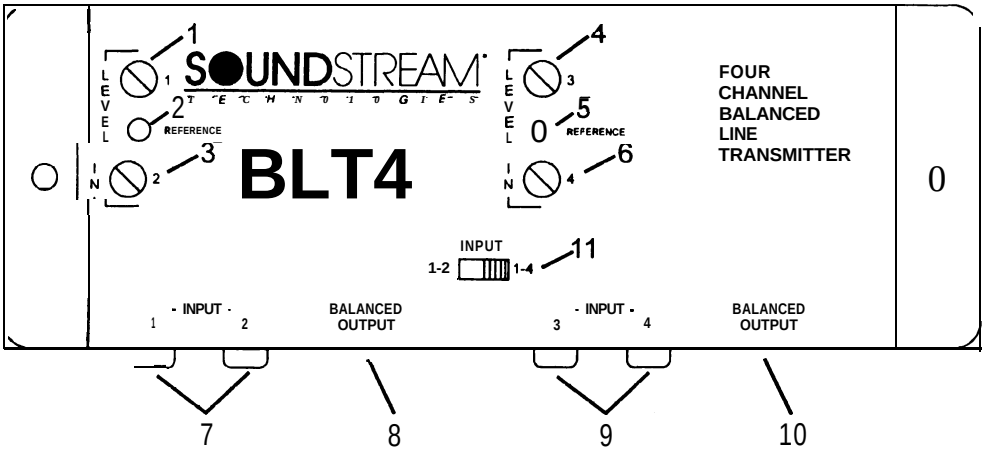
## *Design Features*

- **Phantom Power -** The BLT4 is powered by the ***DaVinci*** amplifier via the mini-DIN cable. This eliminates additional power, ground and remote wire connections.
- **Mini-DIN Cable -** The balanced line audio cable features a small convenient 6-pin mini-DIN plug. This cable carries (+) and (-) signal information for Left and Right channels, audio ground and ±15 Vdc to operate the Soundstream BLT4.
- **Flexible Input Sensitivity** - The BLT4 is designed for optimum performance with a 5 volt balanced signal level. Any head unit having an unbalanced signal output level from 250 mV to 5.0 V can be used to obtain the 5 Volt balanced signal.
- **Independent Level Controls -** The BLT4 features independent Left and Right channel input level controls for added adjustment flexibility and convenience.
- **Channels l-2 & 1-4 Input Select -** Select input 1-2 if you have a single pair of unbalanced inputs. Select input l-4 if you have two pairs of unbalanced inputs. This enables you to receive 4 channels of balanced line output at all times.
- **Clipping Indicator -** The BLT4 also features an input level clipping LED. This lets you know when you have reached the desired 5 Volts balanced audio signal level.
- **Compact Design -** The BLT4's chassis is small enough to fit in the dash of your car behind your radio or in-dash EQ.
- **industry Compatible -** While there is as yet no "industry standard" for car audio balanced line audio connections, you will find an ever-growing number of companies use the same 6-pin connector and pin configuration (See the diagram below).

(For setting the BLT4, see the section on "Level Setting" on page 16.)




*NOTE: The pin configuration shown in the diagram is the view looking into the balanced input / output jacks on the BLT4 and the **DaVinci.***




# *Key to Cal/outs*

1. **Input Level -** Channel 1 (Left) input sensitivity level control.
2. **Input Overload Indicator -** Indicates the signal input level (CH 1&2) input gain level is too high.
3. **Input Level -** Channel 2 (Right) input sensitivity level control.
4. **Input Level -** Channel 3 (Left) input sensitivity level control.
5. **Input Overload Indicator -** Indicates the signal input level (CH 3&4) input gain level is too high.
6. **Input Level -** Channel 4 (Right) input sensitivity level control.
7. **Inputs -** Unbalanced RCA signal inputs (CH 1&2).
8. **Output -** 6-pin DIN Balanced signal output jack (CH 1&2).
9. **Inputs -** Unbalanced RCA signal inputs (CH3&4).
10. **Outputs -** 6-pin DIN Balanced signal output jack (CH 3&4).
11. **Channels 1-2 & 1-4 Input Select -** Channel 3&4 input selector switch. Set to l-2 for internal input from Channels 1&2. Set to l-4 for external input (from Channels 3&4).

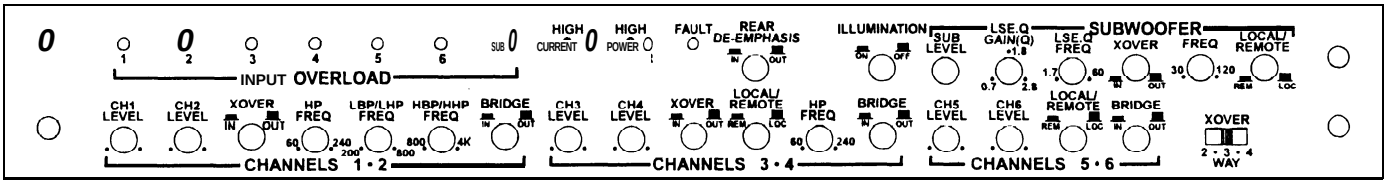
## ***BLT4 SPECIFICATIONS***

| | |
|---|---|
| **Phantom Voltage** | ± 15 Vdc |
| **THD** | <0.01% |
| **Signal-to-Noise Ratio** | >100 dB |
| **Frequency Response** | 20 Hz to 20 kHz ± 0.5 dB |
| **Stereo Separation** | >90 dB |
| **Input Sensitivity** | 250 mV to 5.0 V |
| **Maximum Output Signal** | 5.0 V (2.5 V per phase) |
| **Gain** | 0 to +32 dB (lx to 40x) |
| **Input Impedance** | 10 kohms |
| **Output Impedance** | 600 ohms |
| ***Dimensions:*** | 6.0"L x 2.0"W x 1.22"H |

# INSTALLATION STEP 1

## SELECTING THE CROSSOVER MODES

The ***DaVinci*** amplifier incorporates a sophisticated, fully adjustable electronic crossover for each of its three pairs of channels and subwoofer channel. The ***DaVinci*** amplifier can drive a complete system without need of an outboard electronic crossover.




### LOW PASS

The subwoofer channel is designed to operate in low pass or full range. The low pass is a continuously variable 24 dB/octave electronic crossover with a range of 30 - 120 Hz.

## Z-WAY

### HIGH PASS

The high pass crossover is used for sending only midrange and high frequency information to particular speakers. Activate the high pass crossover to drive satellite or coaxial speakers in the system along with subwoofers. The high pass frequency can be adjusted separately for Channels 1 through 4 of the amplifier. In 2-way mode, Channels 5&6 remote input is fed from Channels 1&2 (if Channels 1&2 are high pass, so are Channels 5&6).

### REAR FILL OF-EMPHASIS

The ***DaVinci*** amplifier features an innovative rear fill de-emphasis circuit which places more emphasis on the front stage when used in 2 or 3-way modes. The circuit removes frequencies from channels 3&4 above 7,000Hz at the rate of 6 dB/octave. By removing upper frequency information from the rear fill, a more natural sounding rear fill effect is created.

## 3-WAY

### MIDBASS /SATELLITE BANDPASS

Channels 1&2 and 5&6 of the ***DaVinci*** amplifier can be operated in a midbass / satellite "bandpass" configuration. In the 3-way mode, you can tri-amplify with "active" midbass to maximize control over individual drivers. This "low range" bandpass filter includes a low pass for the active midbass (Channels 5&6), and a high pass filter for the separate satellites (Channels 1&2). (NOTE: *In 3-way mode, Channels 5&6 inputs are nof used - input is derived from Channels 1&2.)*

## 4-WAY

### MIDBASS / MIDRANGE / TWEETER BANDPASS

Channels 1 through 6 of the ***DaVinci*** amplifier can be operated in midbass / midrange / satellite "dual bandpass" configuration. In the 4-way mode, you can quad-amplify with "active" midbass, midrange and tweeter output to maximize control over individual drivers. The "low range" bandpass filter includes a low pass for the active midbass (Channels 5&6), and a high pass filter for the separate midrange output (Channels 3&4). The second "high range" band pass filter includes a low pass filter for the separate midrange output, and a separate high pass filter for the separate tweeter (Channels 1&2). (NOTE: *In* 4-way mode, *Channels 3,4,5&6* inputs *are not used - input is derived from Channels 1&2.)*

# INSTALLATION STEP 2

## *SELECTING INPUT MODES*

### *REMOTE/LOCAL INPUTS*

The ***DaVinci*** amplifier can be driven with either one, two, three or four separate "balanced audio" DIN inputs (each DIN input contains an audio pair). If your source unit has front and rear outputs, you can take advantage of its fading capability by driving the ***DaVinci*** amplifier in 2 or 3-way modes with two pairs of inputs. When operated this way, the low pass subwoofer channel will operate in a non-fading mode-it derives its signal from the Channel 1,2,3&4 inputs. included with the ***DaVinci*** amplifier is the Soundstream Limited Edition BLT4, which drives two pairs of balanced audio lines. This is perfect for front / rear fading capabilities, or as a subwoofer level controller. Additional balanced line transmitters can be used to drive all of the channels independently if desired. The "Remote/Local" inputs selector switches will be set based on the number of inputs being used, and the mode in which the ***DaVinci*** amplifier is operating (2/3/4-way). Please see the system diagrams on pages 18 - 21 for more details.

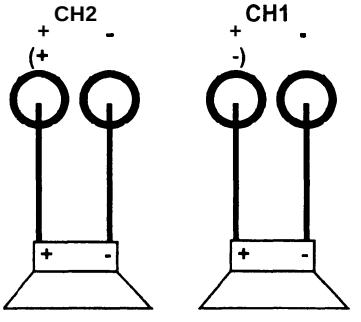
### *BRIDGED OPERATION*

The stereo channels of the ***DaVinci*** amplifier have the ability to operate in either of the following modes:

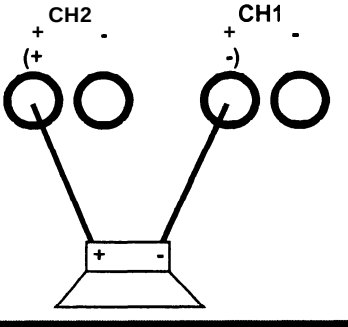
- ***Coherent Stereo™*** with identical left and right stereo channels for maximum fidelity.
- ***Bridged Mono*** for dedicated single channel operation; ideal for using the ***DaVinci*** in four or six-channel operation. It is also used when large amounts of power are necessary for single speakers.

Any of the pairs of stereo channels of the ***DaVinci*** amplifier can be bridged onto a single speaker. For bridged operation, please use the wiring scheme shown below. In bridged mono mode, only the right channel input is active (i.e., use Channel 2 input for bridging Channels 1&2). Since the ***DaVinci*** is a full balanced input amplifier and both the stereo left and right information is one balanced DIN plug, it may be necessary to drive the right channel input of a bridged pair of channels with information from the left channel. The left and right channel information can be swapped at the Balanced Line Transmitter by reversing the left and right channel inputs from the head unit. This way, left channel audio will be fed to the right channel input of a bridged pair. However, an additional balanced line transmitter may be required to accomplish this. Please see the system diagrams for more details.

COHERENT STEREO




BRIDGED MONO




*In bridged mono mode, only the right channel input is active.*

# INSTALLATION STEP 3

## *WIRING*

### *POWER AND GROUND*

To assure maximum output from the ***DaVinci*** amplifier, use high quality, low-loss power and ground cables. The ***DaVinci*** will accept up to 1/0 gauge power and ground cables. At least 4 gauge cable is recommended.

### *CIRCUIT BREAKERS/FUSES*

#### *EXTERNAL*

Like all car audio amplifiers, the ***DaVinci*** must be protected with a fuse or circuit breaker located within 18" of the battery. This will prevent a fire in the event of a shorted cable. **The value of the circuit breaker or fuse should be at least 100 amps, depending upon your application.**

#### *INTERNAL*

The ***DaVinci*** is fused internally with four 30 amp glass fuses. In the event of a blown power supply fuses, the "Fault" indicator on the front panel will light. **Never replace the fuse with a higher value than what is supplied.** ***This may result in amplifier damage and will void the warranty!***

### *REMOTE TURN-O/V*

Connect the turn-on lead from the source unit to the "Remote" input on the amplifier. When +12 volts is received, the amplifier will turn on.

### *SIGNAL CABLE*

Depending on your application, you may use one to four DIN audio balanced signal cables to drive **your *DaVinci*** amplifier. Use the cables supplied with the BLT4 Balanced Line Transmitter, or see your local Soundstream dealer.

### *SPEAKER CABLE*

The ***DaVinci*** will accept up to 8 gauge **(4** gauge on sub channel) speaker cable. Use a high quality, flexible, multi-strand cable for best performance and longevity.

# INSTALLATION STEP 4

## *INSTALLATION AND MOUNTING*

### 1. *AMPLIFIER LOCATION*

The ***DaVinci*** amplifier employs highly efficient circuitry, an internal heat sink and fan cooling system to maintain lower operating temperatures. Make sure that no debris will be able to fall through the top plate of the ***DaVinci.***

When mounting the amplifier, it should be securely mounted to either a panel in the vehicle or an amp board / rack that is securely mounted to the vehicle. The mounting location should be either in the passenger compartment or in the trunk of the vehicle, away from moisture, stray or moving objects, and major electrical components. To provide adequate ventilation, mount the amplifier so that there are at least two inches of freely circulating air above and to the sides of it.

### 2. *MODE SWITCHES*

Set the input switches and crossover switches to the appropriate positions (these can be set and adjusted at any time).

### 3. *MOUNTING THE AMPLIFIER*

a. Using the amplifier as a template, mark the mounting surface.

b. Remove the amplifier and drill the holes.

c. Do not mount the amplifier until all of the wiring is completed.

### 4. *WIRING*

a. Run and connect the audio signal and remote turn-on cables to the amplifier from the source unit through the access panel on the bottom of the ***DaVinci.***

b. **Carefully run the positive cable from the amplifier to a fuse or circuit breaker within 18" of the battery.**

c. Then connect the fuse or circuit breaker to the battery. Leave the circuit breaker off or the fuse out until everything is bolted down.

d. Secure the ground cable to a solid chassis ground on the vehicle. It may be necessary to sand paint down to raw metal for a good connection.

e. Run and connect the speaker wires to the amplifier through the bottom access panel.

f. Double check each and every connection!

g. Reconnect the fuse or circuit breaker.

h. Mount the amplifier in its permanent position.

### 5. *POWER UP*

Power up the system and look in the front access panel of the ***DaVinci.*** The red High Power LED should be lit; there may be a 2-3 second delay from the time the source unit is turned on to the time that the LED on the amp turns on, which is normal. Once the amplifier power LED is on and the source unit is playing, you should have sound coming from the speakers.

# INSTALLATION STEP 5

## CROSSOVER ADJUSTMENTS

The crossover in the ***DaVinci*** is very flexible, allowing for high pass, bandpass and low pass filters to be set independently of each other.

In most car audio installations, there is a tendency for a "midbass boom." Because of their interior dimensions, most cars will resonate or ring at these midbass frequencies. If we design the system so there is less musical information in this region, the final response is very smooth and natural sounding. For 3 and 4-way systems with active midbass, the output level of the midbass channels can also give extra control over this midbass boom.

The ***DaVinci*** incorporates a continuously variable staggered asymmetrical electronic crossover. The satellite high and subwoofer low pass portions of the crossover can be adjusted independent of one another. However, the high and low pass filters of the two bandpass ranges are not independent. Follow the procedure below to adjust the crossover.

### *Z-WAY MODE*

For initial crossover setup, try setting the subwoofer low pass filter to approximately 60 Hz, and the high pass filters to approximately 100 Hz. Change the crossover points to accommodate a good mixture of frequency response, power handling, and personal preference.

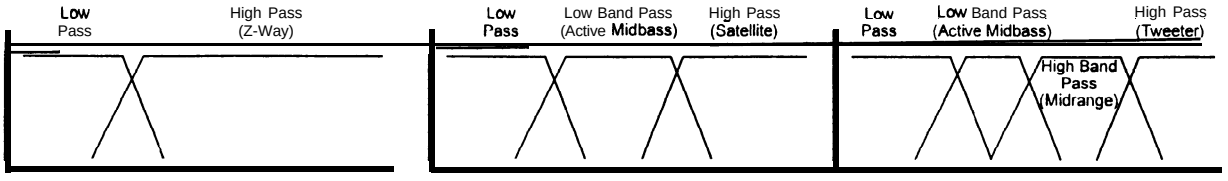
### *3-WA Y MODE (Midbass / Satellite)*

For initial crossover set-up, try setting the subwoofer low pass filter to approximately 60 Hz, and the high pass filter for the midbass output (Channels 1&2 high pass filter) at 100 Hz. Set the low range band pass crossover point (LBP/LHP) at about 400 Hz (12 o'clock). Change the crossover points to accommodate a good mixture of frequency response, power handling, and personal preference.

### *4-WA Y MODE (Midbass / Midrange / Tweeter)*

For initial crossover set-up, try setting the subwoofer low pass filter to approximately 60 Hz, and the high pass filter for the midbass output (Channels 1&2 high pass filter) at 100 Hz. Set the low range bandpass crossover point (LBP/LHP) at about 400 Hz (12 o'clock). Set the the high range bandpass crossover point (HBP/HHP) at about 2 kHz (12 o'clock). Change the crossover points to accommodate a good mixture of frequency response, power handling, and personal preference.

***Warning!!!:*** Be careful when setting the high pass filter frequency for the tweeter. A low crossover frequency could potentially damage a tweeter. Review the manufacturers specifications for safe operating range. A good way to guarantee that the crossover frequency will not be too low is to use a passive crossover network on the tweeter, as well as the active control.




Front Channel (2-Way) Front Channel (3-Way) Front Channel (4-Way)

***NOTE:*** ***You*** *may find it necessary to readjust the crossover* ***after*** *listening to the system. The correct settings are a combination of the capabilities of the equipment and your listening preferences.*

# INSTALLATION STEP 6

## *LEVEL SETTING*

The input levels are adjusted by means of the independent input level controls located under the access panel on the top of the amplifier. This is a unique dual-stage circuit that adjusts both level and gain. This topology maintains better signal-to-noise ratios even with low output sources.

In the ideal situation, all components in the audio system reach maximum undistorted output at the same time. The reason is because an amplifier will only make what comes into it bigger. So, if you send it a distorted signal from the head unit, it is going to amplify distorted information. The same thing holds true if an outboard processor or crossover begins to distort before you have maximum output from the amplifier. By setting all components to reach clipping at the same time, you can maximize the output of your system. For the ***DaVinci***, follow the below procedure for the quickest, easiest means of setting the levels.

1. Turn the amplifier's input levels to minimum position (fully counter-clockwise).

2. Set the input levels on the BLT4 first.
   a. Disconnect any speakers from the amplifier.
   b. Turn the BLT4 input level controls to the minimum position (fully counter-clockwise).
   c. Set source unit volume to approximately 3/4 of full volume.
   d. While playing extremely dynamic source material or a test tone, slowly increase the BLT4 input level until the red LED labeled "REFERENCE" on the top of the BLT4 begins to blink. This calibrates the input sensitivity of the BLT4 to the level of your head unit. (NOTE: To set the BLT4 level, Soundstream recommends using the Autosound 2000 Compact Disc #102 Track 27, 1kHz 0 dB "all bits high" tone. If this CD is not available, a similar tone from a test CD can be used, or an extremely dynamic CD with a high crest factor. Remember; the "loudest" CD you have may not be the most "dynamic"!)

3. The next step is to set the levels on the amplifier. While playing dynamic source material, adjust the input levels of you amplifier so that the input LED's on the amplifier begin to blink as well. This will set the approximate amplifier level.

4. For the final amplifier adjustment, turn the system off and reconnect the speakers. Turn the system on, and and turn up the source unit to an acceptable level. Adjust the amplifier's input level on each channel until a clean and undistorted level is heard in the system, and a good balance between channels is reached. Be sure to pay attention to the clipping indicators. These will notify you that you are clipping the PREAMPLIFIER stage of the ***DaVinci.*** If the amplifier's output is distorted and the clipping lights are not blinking, you are most likely clipping the OUTPUTS of the amplifier, or driving the speaker to distortion.

# INSTALLATION STEP 7

## LSE.Q
## THEORY AND USE

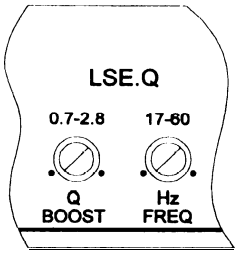


FIG. 1 LSE.Q

**LSE.Q** is a proprietary subwoofer control circuit included with the ***DaVinci*** amplifier. It is capable of both removing subsonic energy in program material and providing a variable boost at low frequencies. The circuit consists of two controls. One adjusts the frequency of operation, and the other adjusts the range of boost. With both controls adjusted fully counter-clockwise, no boost is applied and the amplifier is flat in response down to 20 Hz.

**The frequency control (Hz)** adjusts the starting point of the subsonic filter. This high pass filter can be adjusted from 20 Hz up to a maximum of 60 Hz. This control is useful for setting the lowest frequency that your subwoofer will see. (See Figure 1)

**The Q control** adjusts the amount of boost applied at the set frequency. This is adjustable from .707 (flat) to 2.8 (+9 dB). (See Figure 2)

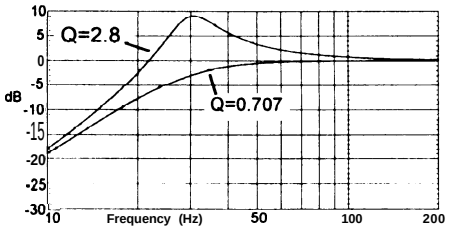


FIG. 2 Variable "Q"

When the Q is set to .707 (Butterworth), LSE.Q acts as a subsonic filter only. (See Figure 3)

The simple act of removing the signal below the vented tuning frequency can improve system output by as much as 3 dB. With Q values greater than .707, boost is added in addition to the subsonic filter. (See Figure 4)

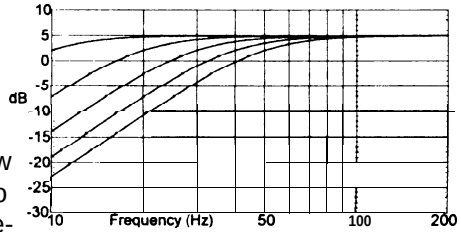
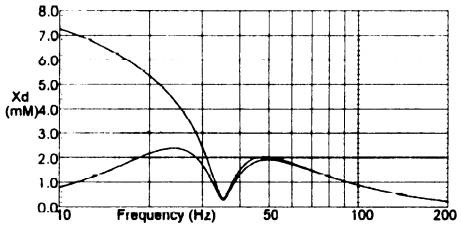


FIG. 3 Variable High Pass

### Application

Woofers in vented enclosures have good power handling characteristics above the tuning frequency, but below the tuning frequency, power handling drops off considerably. This is due to the loss of any appreciable resistive air mass. At frequencies below resonance, the woofer starts to behave as if it were mounted in "free-air". If we wish to improve the performance of a vented system, we should remove these unwanted signals by adding the subsonic filter. Figure 5 shows the effectiveness of LSE.Q on woofer excursion. Woofer travel is 7.5 mm at 10 Hz, with LSE.Q properly adjusted, this excursion can be reduced to less than 1 mm. This is of great benefit to lowering woofer distortion and increasing output.



FIG, 5 Limited Excursion

### Adjustment

An easy method of optimizing your existing subwoofer enclosure with LSE.Q's "Hz" control is as follows.

1. Adjust frequency and boost control to full CCW position.
2. While listening to music with strong bass content at a moderate level, slowly adjust the frequency control clockwise. Listen for a reduction of bass response. Now, rotate frequency control slightly backwards. This serves the purpose of removing the "subsonic" bass energy.

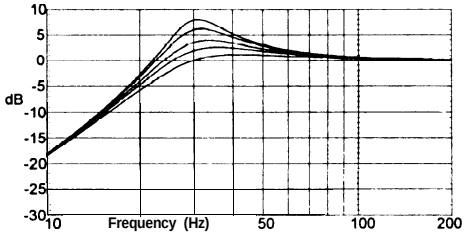


FIG. 4 Variable "Q"

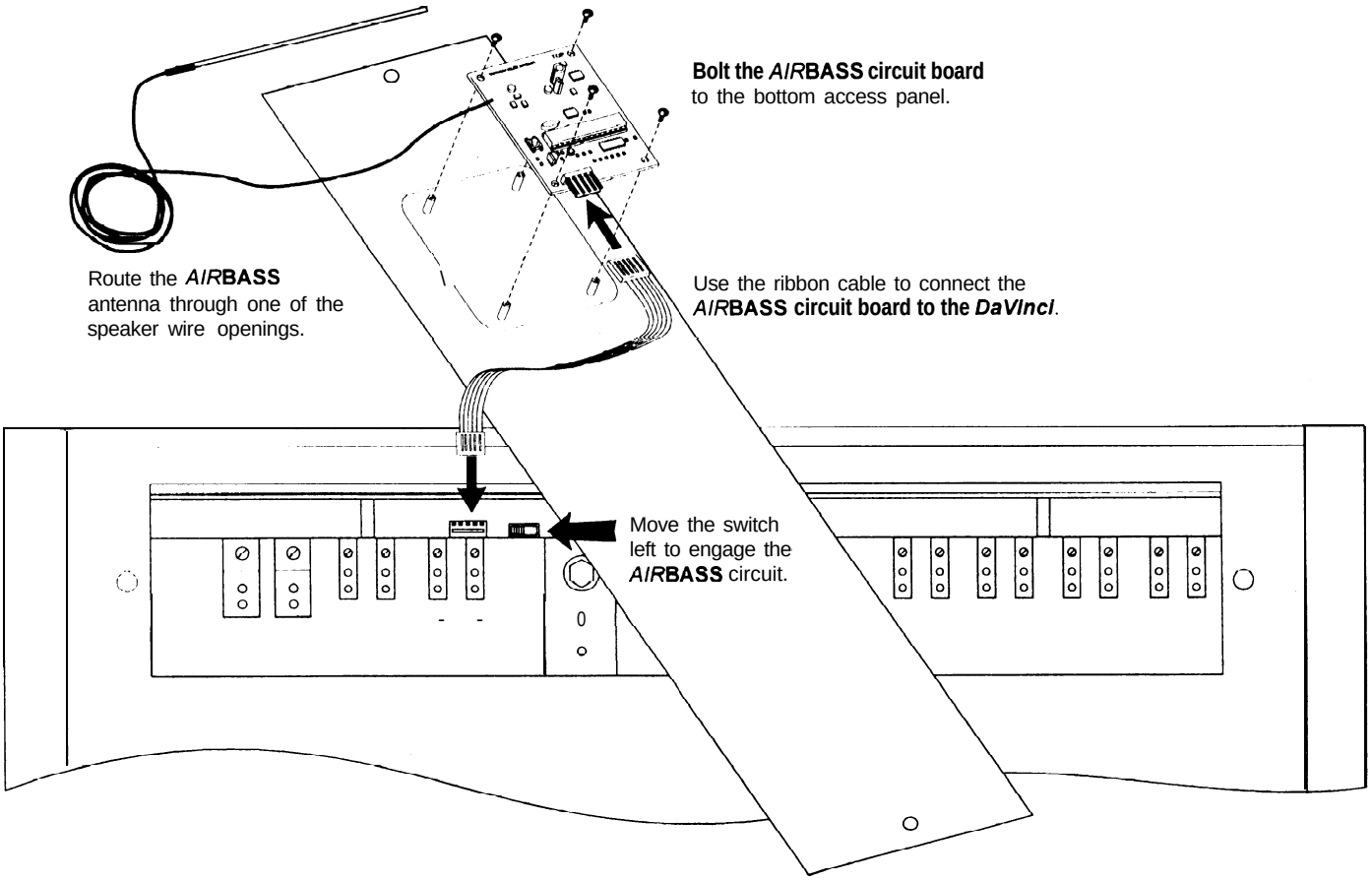
Soundstream's LSE.Q contains the same type of circuit with the added benefit of infinite adjustability. Our "Q" and "Hz" control can provide virtually any combination of boost and cut to suit your designs. So, LSE.Q can provide the "tailoring" needed for any type of "assisted" design and any woofer.

# *AIR*BASS (optional)

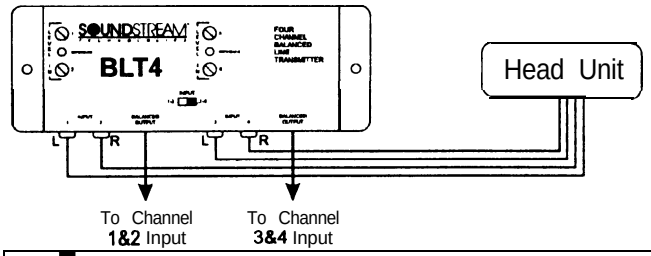
Soundstream AIRBASS feature can be added to the ***DaVinci*** amplifier. This feature allows wireless RF remote control level adjustment of the ***DaVinci's*** subwoofer channel.

> ***NOTE:*** **The AIRBASS accessory option operates** *the subwoofer channel only. AIR***BASS** *does not control the /eve/ of channels* ***1 - 6.***

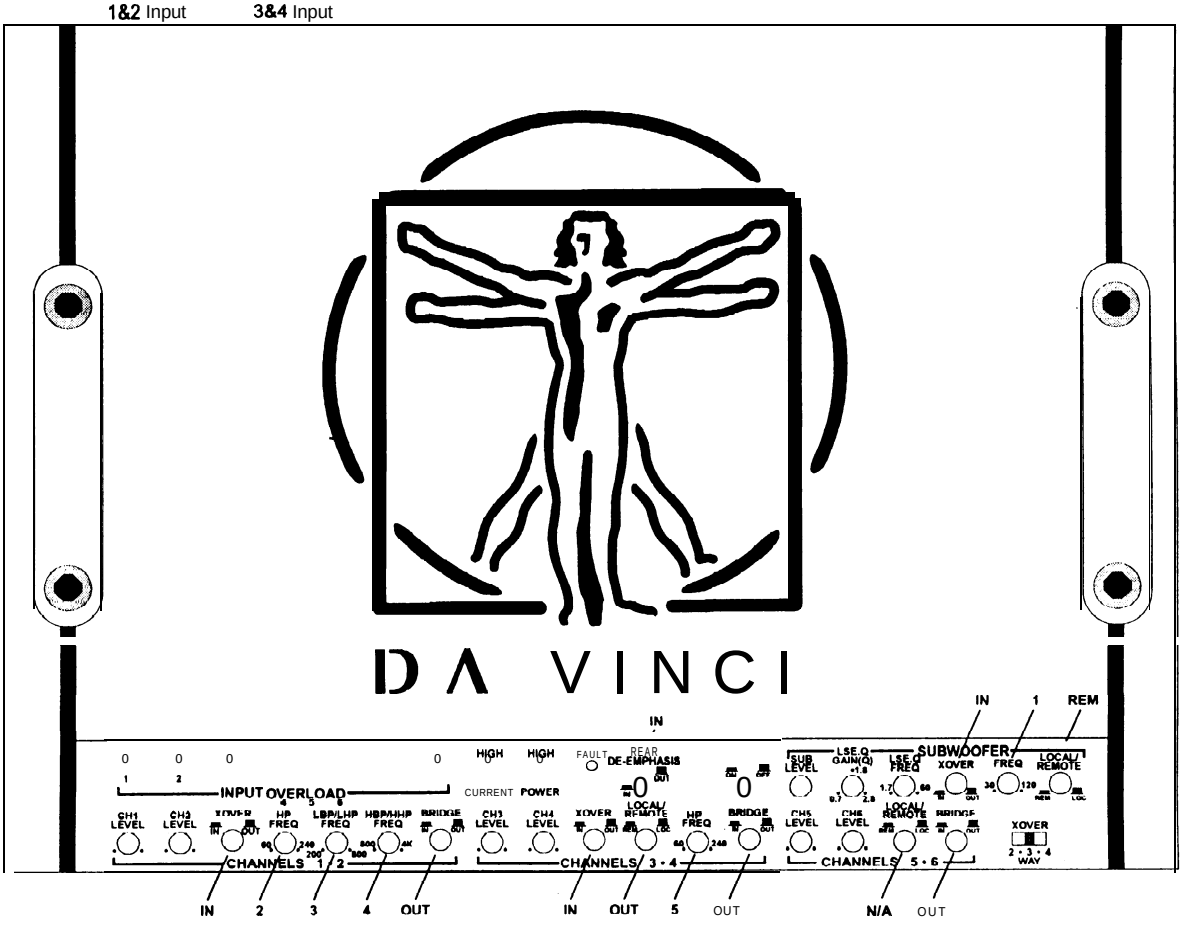
Installing *AIR***BASS** involves removing the bottom access panel of the amplifier, adding the **AIRBASS** circuit board, and flipping a switch. (See the diagram below.) The switch is located on one of the ***DaVinci*****'s** input circuit boards. DO NOT set the AIRBASS switch unless the AIRBASS module has been added. DO NOT set the *AIR***BASS** switch while the amplifier is "ON". Doing so may damage your speakers. (Please refer to the AIRBASS owner's / installation manual for more details.)

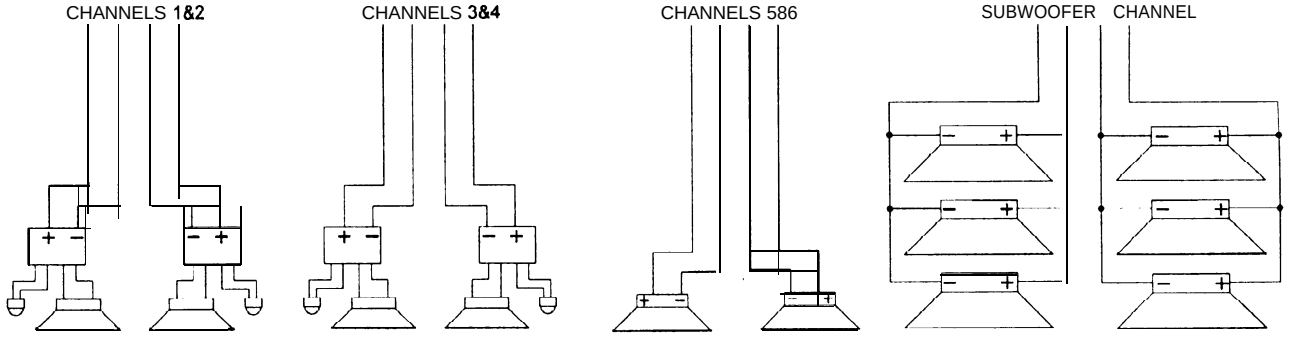


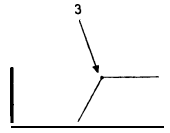
# SAMPLE SYSTEM #1



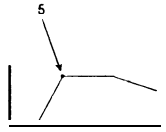

*3-way active midbass system*
*Non-fading subwoofer output*
*Multiple sub woofers*
*Rear satellite speakers w/De-Emphasis*



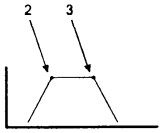



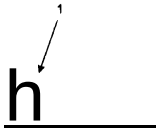

12 dB/Oct HIGH PASS
(200Hz - 800Hz)




12 dB/Oct HIGH PASS
(60Hz - 240Hz)
+ De-Emphasis



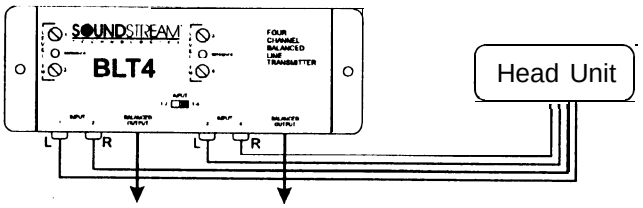

12 dB/Oct HIGH PASS
(60Hz - 240Hz)
12 dB/Oct LOW PASS
(200Hz - 800Hz)




24 dB/Oct LOW PASS
(30Hz - 120Hz)

# SAMPLE SYSTEM #2

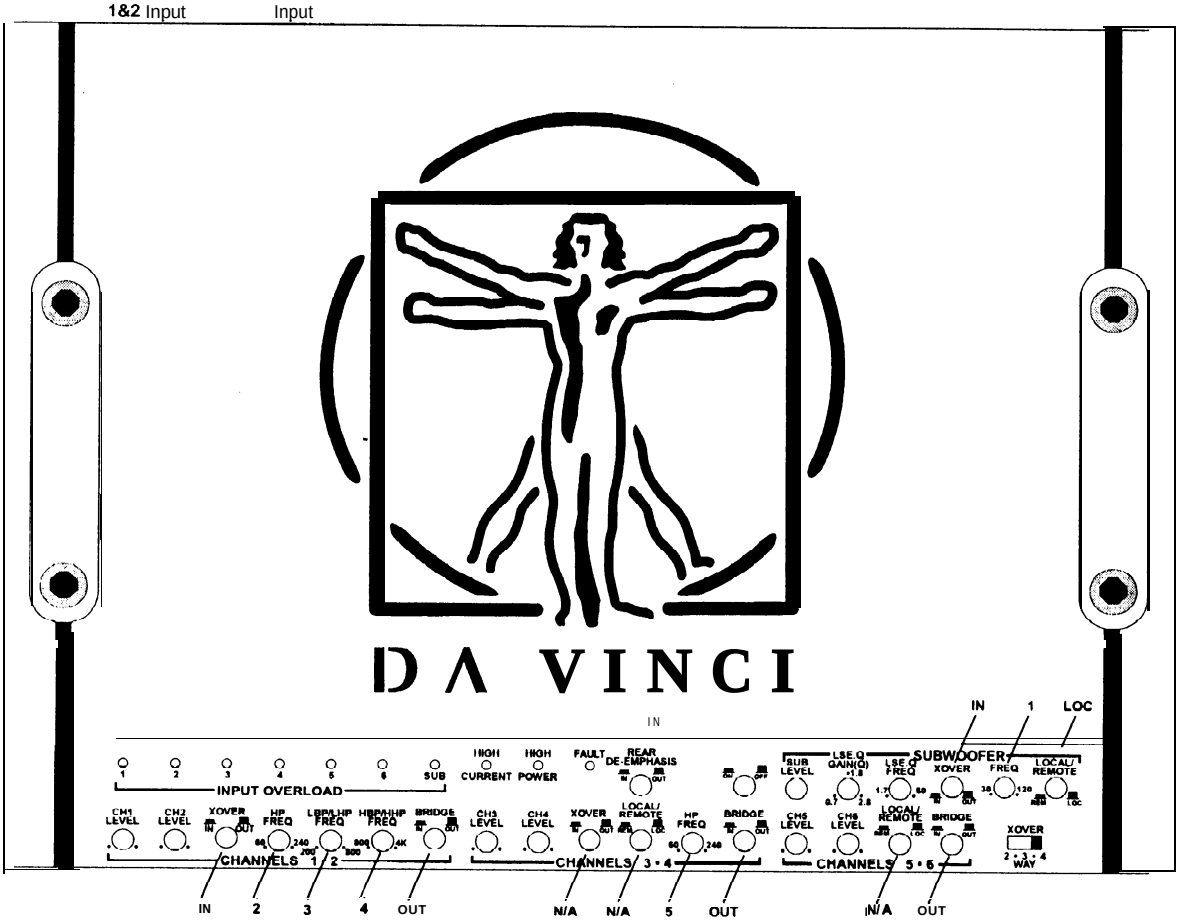
*4-way active midbass/midrange system*
*Fader acts as subwoofer /eve/ control*
*Multiple sub woofers*



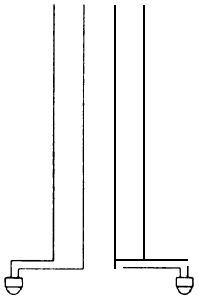

Head Unit

To Channel 1&2 Input

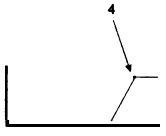
To Su bwoofer Input




CHANNELS 1&2

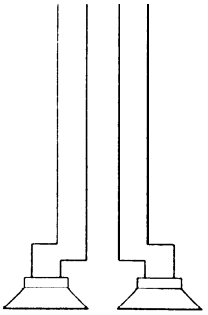


FRONT TWEETERS

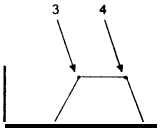



12 dB/Oct HIGH PASS
(800Hz - 4kHz)

CHANNELS 3&4

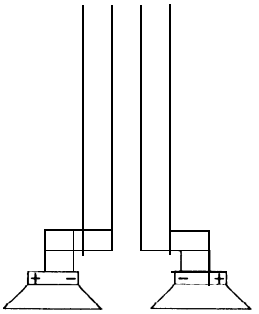


FRONT MIDRANGE SPEAKERS

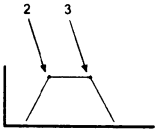



12 dB/Oct HIGH PASS
(200Hz - 800 Hz)
12 dB/Oct LOW PASS
(800Hz - 4kHz)

CHANNELS 5&6

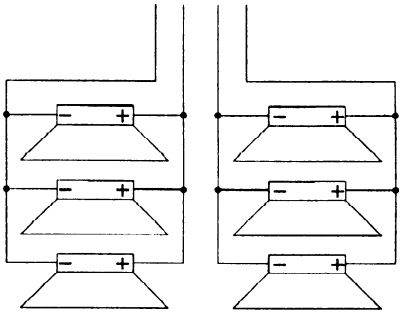


FRONT MIDBASS SPEAKERS

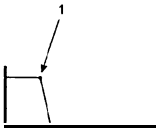



12 dB/Oct HIGH PASS
(60Hz - 240Hz)
12 dB/Oct LOW PASS
(200Hz - 800Hz)

SUBWOOFER CHANNEL

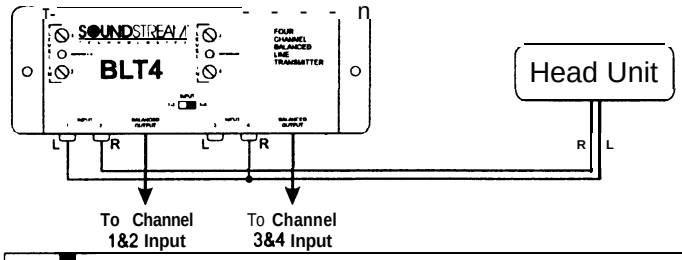


SUBWOOFERS




24 dB/Oct LOW PASS
(30Hz - 120Hz)

# SAMPLE SYSTEM #3

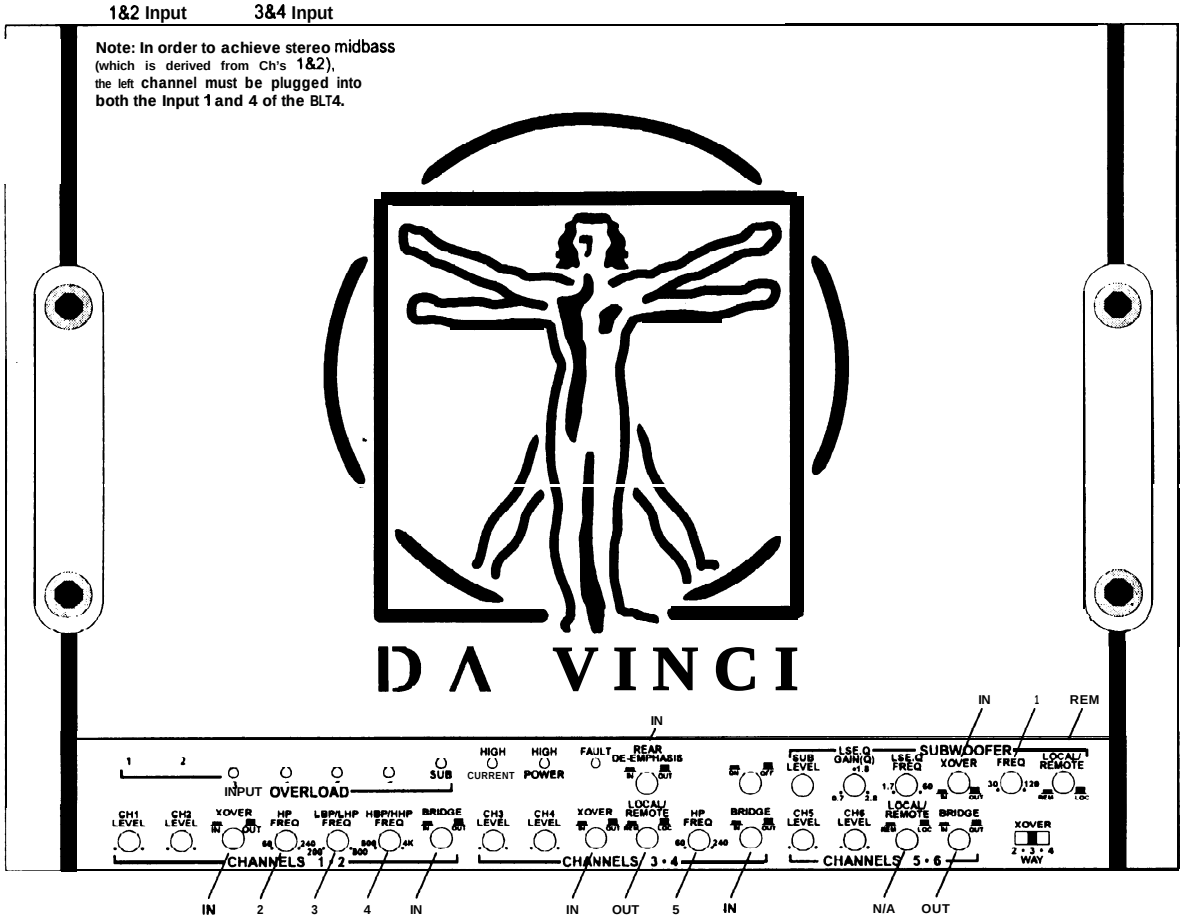



*3-way active midbass system*
*Non-fading subwoofer output*
*Multiple subwoofers*
*Bridged 5-Channel operation*

To Channel 1&2 Input

To Channel 3&4 Input

**Note: In order to achieve stereo midbass (which is derived from Ch's 1&2), the left channel must be plugged into both the Input 1 and 4 of the BLT4.**

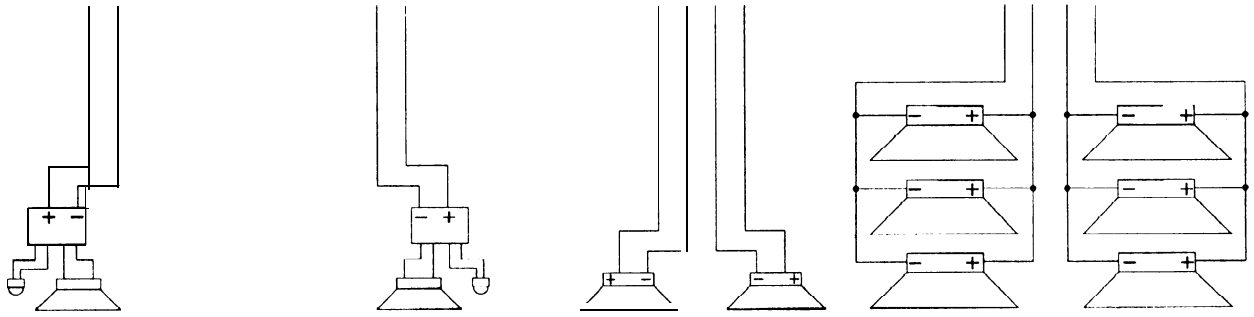



CHANNELS 1&2

CHANNELS 3&4

CHANNELS 5&6

SUBWOOFER CHANNEL

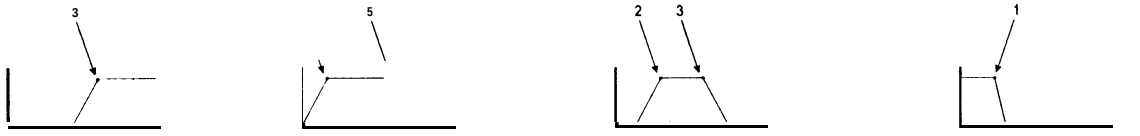


RIGHT SATELLITE SPEAKERS

LEFT SATELLITE SPEAKERS

FRONT MIDBASS SPEAKERS

SUBWOOFERS




12 dB/Oct HIGH PASS (200Hz - 800Hz)

12 dB/Oct HIGH PASS (60Hz - 240Hz)

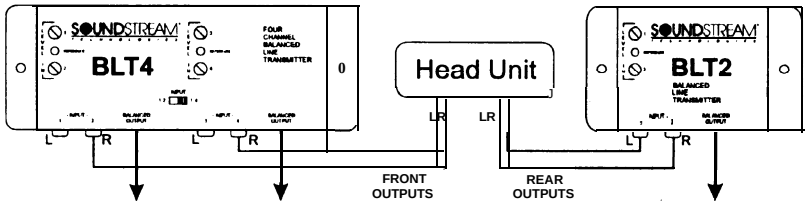
12 dB/Oct HIGH PASS (60Hz - 240Hz)
12 dB/Oct LOW PASS (200Hz - 800Hz)

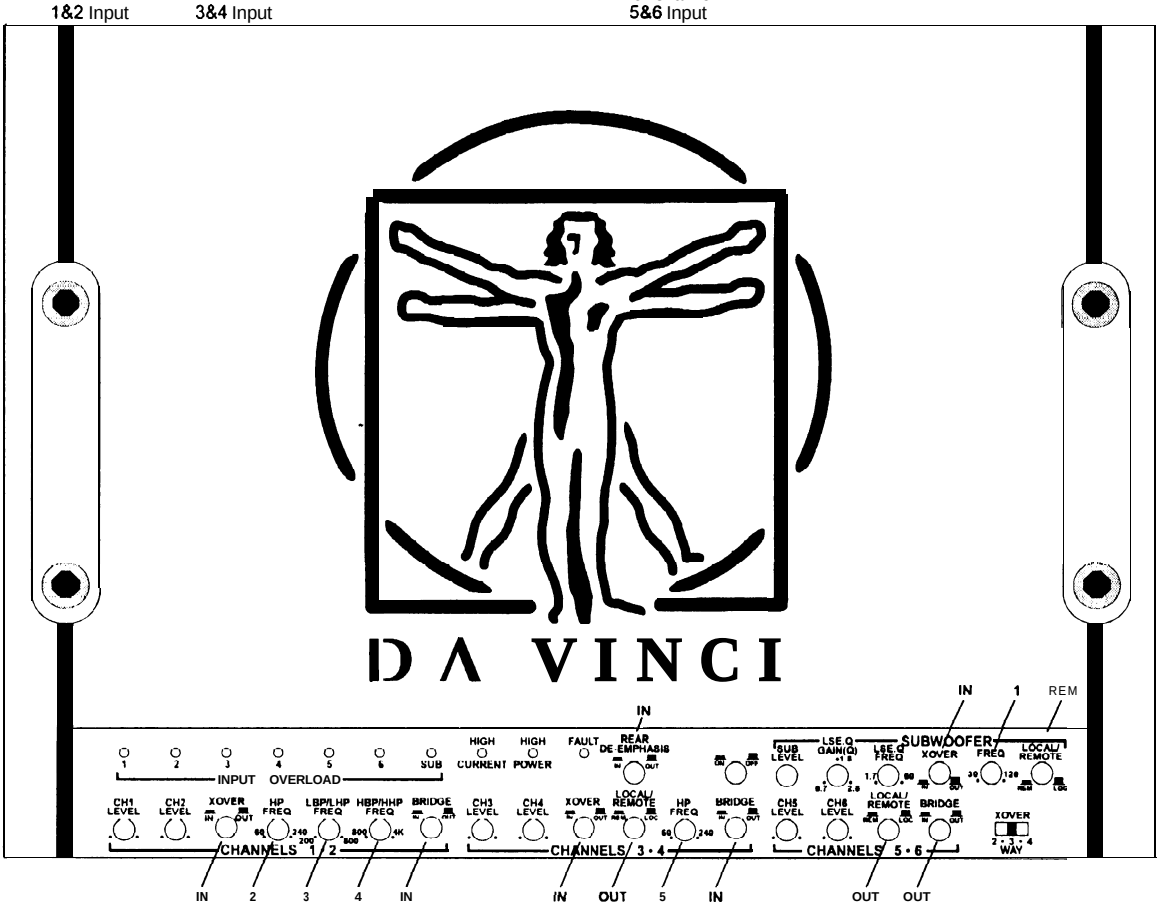
24 dB/Oct LOW PASS (30Hz - 120Hz)

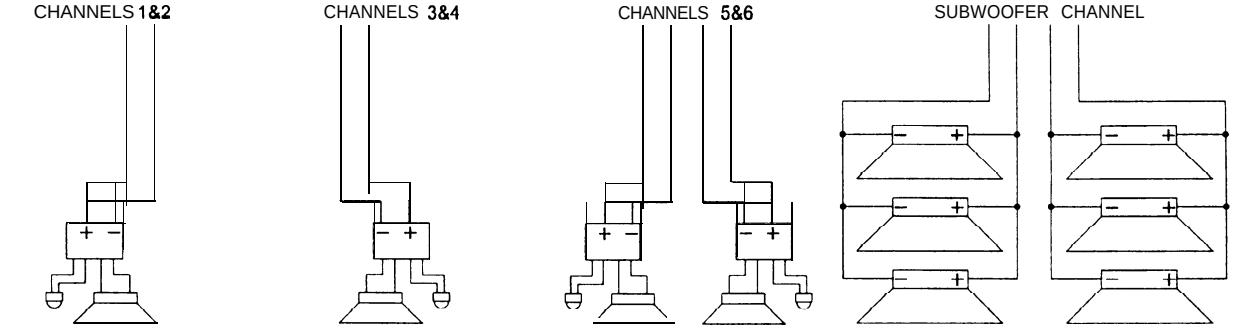
# SAMPLE SYSTEM #4

*(Must be purchased Separately)*

*2-way active midbass system*
*Multiple sub woofers*
*Front / Rear Fader with*
*Rear satellite speakers*



## PROTECTION CIRCUITRY

Your ***DaVinci*** amplifier is protected against both overheating and short circuits by means of the following circuits:

- Main power supply fuses (4 x 30 amps)
- Smart Power Supply Thermal Rollback™ activating at 85°C.
- A fail-safe thermal protection circuit activating at 95°C.

Your amplifier also incorporates an innovative Fault Diagnosis System that identifies a blown power supply fuse.

*NOTE: If you experience blown main power supply fuse, DO NOT increase value beyond the factory supplied fuses! Doing so will void your warranty and may damage your amplifier.*

## TROUBLESHOOTING

| *PROBLEM* | *CAUSE* |
|---|---|
| No sound and LED's are not lit | • no power or ground at amp<br>• no remote turn-on signal<br>• blown fuse near battery |
| Fault LED is lit | • amp power supply fuse is blown or missing |
| Repeatedly blown amp fuse, frequent activation of Smart Power Supply Circuit | • speaker or leads may be shorted<br>• verify adequate amplifier ventilation |
| No sound from channels with input | • check input settings on top of amplifier-verify remote or local source inputs.<br>• Check input switch on BLT4. |
| No sound from sub channel & *AIR***BASS** is not installed. | • check input settings on top of amplifier-verify remote or local source inputs<br>• Verify that the *AIR***BASS** switch is **not engaged.** |

## SERVICE

The ***DaVinci*** is protected by a limited warranty. Please read the enclosed warranty card.

# SPECIFICATIONS

## POWER OUTPUT ,

### SATELLITE CHANNELS

| | 4 Ω Stereo (8 Ω Bridged) 12 Volts | 2 Ω Stereo (4 Ω Bridged) 14.4 Volts |
|---|---|---|
| **Watts** | 50 w x 4 (100 w x 2) + 100 w x 2 (200 w x 1) | 100 w x 4 (200 w x 2) + 200 w x 2 (400 w x 1) |

### SUBWOOFER CHANNEL

| | 4 Ω 12 Volts | 2 Ω 14.4 Volts | 1 Ω 14.4 Volts |
|---|---|---|---|
| **High Power** | **200 w** | **400 w** | 500 w |

| | |
|---|---|
| THD | < 0.1% |
| Signal-to-noise Ratio | > 100 dB |
| Frequency Response | 20 Hz to 20 kHz +/- 0.5 dB |
| Bandwidth | 15 Hz to 50 kHz |
| Stereo Separation | > 90 dB |
| Damping | > 200 |
| Input Sensitivity | 500 mV - 5.0 V |
| Input Impedance | 12 k ohms |

### *CROSSOVER SPECIFICATIONS (all continuously variable):*

***2-way***

High Pass: 12 dB/octave, 60 - 240 Hz
Low Pass: 24 dB/octave, 30 - 120 Hz

***3-way***

Midbass High Pass: 12 dB/octave, 60 - 240 Hz
Midbass Low Pass: 12 dB/octave, 200 - 800 Hz
Subwoofer Low Pass: 24 dB/octave, 30 - 120 Hz

***4-way***

Tweeter High Pass/Midrange Low Pass: 12 dB/octave, 800 Hz - 4 KHz
Mid High Pass/Midbass Low Pass: 12 dB/octave, 200 - 800 Hz
Midrange or Midbass High Pass: 12 dB/octave, 60 - 240 Hz
Subwoofer Low Pass: 24 dB/octave, 30 - 120 Hz

### *DIMENSIONS:*

***19"*** W x 14" D x 5.5" H

SOUNDSTREAM®

TECHNOLOGIES

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