

FOUR.1ⁱ™ In-Dash
In-Dash Equalizer and Pre-Amp Line Driver
Owner's Enjoyment Manual

AudioControl
making good stereo sound better[®]

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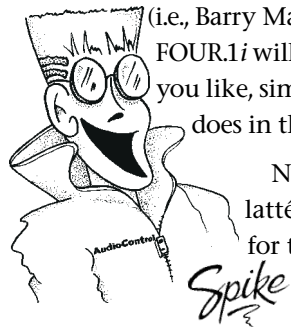
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INTRODUCTION

Congratulations on your purchase of a truly unique and versatile product, the AudioControl FOUR.1i (pronounced Four Point One Eye) in-dash equalizer/line driver. This product improves the sound quality and performance of any amplified car stereo system. Our world famous, award-winning trunk mount equalizers are adjusted and then stashed away, while the FOUR.1i is for the car audio enthusiast and the perpetual tweaker.

Ever wonder who would buy that lime green Plymouth station wagon you saw sitting in the car lot? It was built with somebody in mind. Music is the same way. People have different tastes and opinions about the music they listen to. (i.e., Barry Manilow and The Beastie Boys). The FOUR.1i will let you tune your system to what you like, similar to what a recording engineer does in the studio.



Now sit back and grab a double tall latté and peruse this Enjoyment Manual for the FOUR.1i in-dash equalizer.

Features of the FOUR.1i:

- Stereo graphic equalization
- Para-BASS low frequency controls
- Pre-amp gain of 20dB
- Line driver: 13 volts peak output
- Balanced differential inputs and outputs
- High-headroom PWM switching power supply
- Main and auxiliary switchable inputs
- Switchable backlighting color (amber/green)
- Master volume and fader control
- Selectable ground isolation
- Optimum voltage LED

QUICK INSTALLATION INFO

For those of you who are short on time and brimming with confidence, or caffeine for that matter, refer to pages 10 and 11 (Figures 6, 7, & 8). As a matter of reference the FOUR.1i is shipped in the following configuration:

| | <u>Shipped</u> | <u>Option</u> | <u>Page #</u> |
|------------------|-----------------------|----------------------|----------------------|
| Illumination | Green | Amber | 7 |
| Inputs | Balanced | Unbalanced | 6 |
| Outputs | Unbalanced | Balanced | 7 |
| Ground Isolation | Isolated | 200ohm or Ground | 7 |
| Input Gain | 0dB | 0dB to +20dB | 11 |

It is important to know that we recommend that you allow your authorized AudioControl dealer to install your FOUR.1i. When they install your FOUR.1i, we will warranty your FOUR.1i for an unbelievable 5 years parts and labor. Should you opt to install the FOUR.1i on your own, the warranty is for 1 year.

FEATURES AND HIGHLIGHTS

This section will tell you about all of the nifty features of your FOUR.1i. Knowing these features will help you maximize the performance of your FOUR.1i in-dash equalizer as well as making you the “Big Cheese” with your autosound buddies.

Graphic Stereo Equalization: The FOUR.1i turns the dashboard of your car into a mini-mixing board, just like those in a recording studio. The FOUR.1i has four frequency controls set at 8000Hz, 2000Hz, 500Hz, and 125Hz. These controls will make dramatic improvements in any system.

Para-BASS: You want bass, we’ve got bass. This specially designed parametric control lets you adapt the bass response of any system to your listening desire. Given all of the various types of music combined with numerous possible bass response anomalies in every vehicle, a single equalization control for bass just doesn’t cut it. It’s like painting a picture with only one color . . . BORING!

Pre-Amp Line Driver: Talk about your ironies. To operate with maximum dynamic range and the best signal-to-noise ratio amplifiers require a high voltage input signal (generally 2 to 5 volts) . On the other hand, typical source units only put out 1 to 2 volts, (if you’re lucky!) In a system where the source unit is located in the front of the car and the amplifiers are located in the rear, the length of the connecting cables will also cut the strength of the signal.

The FOUR.1i includes a line driver that takes the weak output voltage of a head unit and increases it up to 20dB (up to 13 volts peak) and then delivers it downstream to the amplifier inputs.

Auxiliary Input: The FOUR.1i has an “AUX” switch on the front to allow you to switch back and forth between sources.

If you are thinking about adding a video system, or even that extra compact disc player or DVD player, the FOUR.1i makes hook-up a snap!

Master Volume:

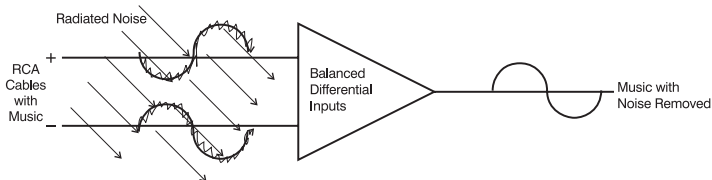
The FOUR.1i has its own master volume KNOB (no annoying up & down switches for us) to control the signal output to the amplifiers. Raise the volume level on your source units to their maximum and you will never need to touch them again.

Fader Control:

For easy balancing between the front and rear speakers the FOUR.1i has four output channels and a fader control.

Balanced Inputs & Outputs: The FOUR.1i uses a unique balanced differential input circuit that helps cancel any noise that radiates into the signal path between the source unit and your FOUR.1i. The FOUR.1i then sends this balanced signal downstream to another processor or amplifier that has balanced inputs (blatant plug for AudioControl products) which will keep it noise-free.

Figure 1: Balanced Inputs



The Most Important Feature Of All:

Reliability. That's right, your AudioControl FOUR.1i comes with a full 5 year parts and labor warranty when it is installed by an authorized United States AudioControl dealer. These seasoned pros have the training and the equipment to take care of the job quickly and not leave your dashboard looking like swiss cheese. Keep in mind that if you or your friends who are "good with electronics" choose to install it, your FOUR.1i still has a 1 year parts and labor warranty.

To activate your warranty, you need to FILL OUT AND SEND IN YOUR WARRANTY CARD! Also, save your invoice or sales slip as proof of purchase. Not only are these necessary for warranty purposes, they are also important if the unforeseen disappearance of your FOUR.1i should happen while you are socializing at the local espresso and salmon bar. Insurance companies have very little imagination.



A GUIDED TOUR OF THE FOUR.1i

1. Graphic Equalization Bands: Four stereo controls centered at 125Hz, 500Hz, 2KHz, and 8KHz with 12dB of cut or boost. These controls should be used to tweak your system, depending upon your mood.

2. Para-BASS Controls: Two simple controls allow for killer bass tweaking. The sweep knob selects the center frequency, between 40 and 80Hz. The gain knob provides 12dB of boost or cut, centered at the sweep frequency.

3. Auxiliary Inputs: The FOUR.1i has an auxiliary input to hook up a second source unit, like an outboard video system or even a factory radio. The input is activated by the left most switch located on the front faceplate.

4. Volume: Because the FOUR.1i is a pre-amp unit, it serves as the main control unit in the audio system. It has a master volume control that controls the output to all of the amplifiers. Turn the volume control of your source unit all the way up and deliver maximum voltage to the FOUR.1i. Better signal-to-noise ratio and maximum SPL!

5. Fader: The fader control will allow you to fade the signal level back and forth between front and rear amplifier channels. This means you can have front and rear fading even though your source unit only has two-channel outputs.

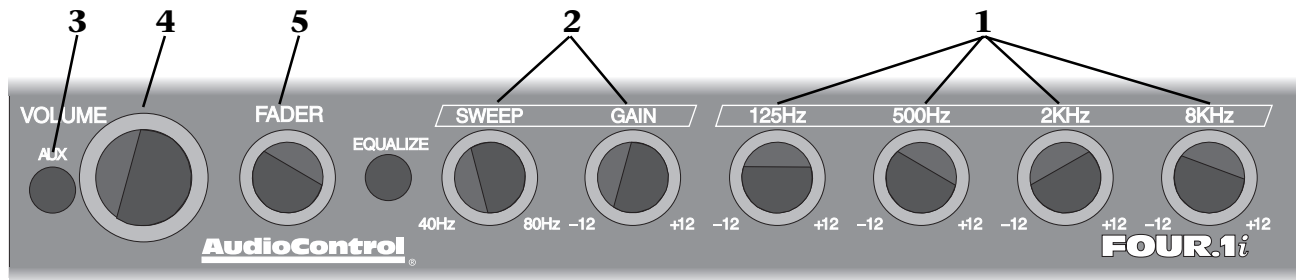


Figure 2: Front View of FOUR.1i

6. Power Connections: This nifty connector is a god-send to anyone who has tried to wire up their gear with their head crammed under the dash. You can wire up the power,

ground, remote turn-on, and illumination from the convenience of the driver's seat and then casually plug it in the back of your FOUR.1i.

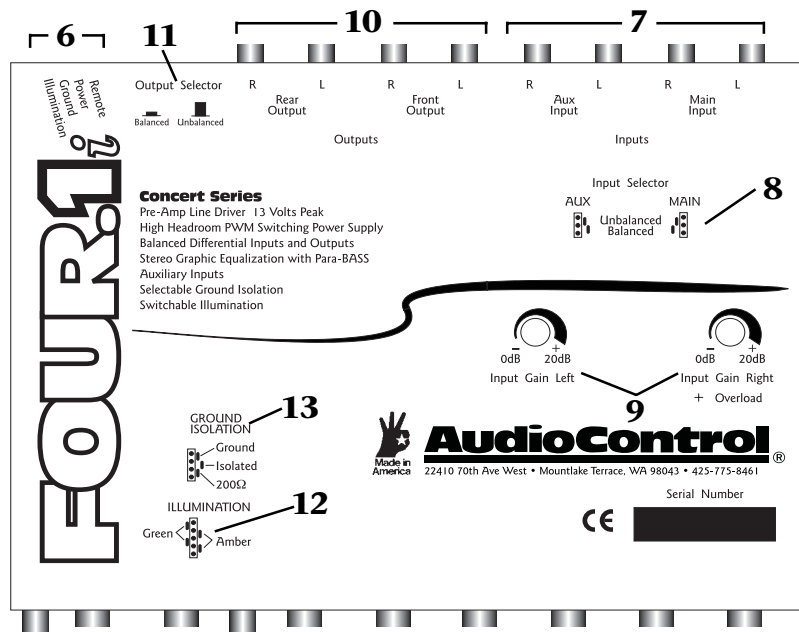


Figure 3: Top View of FOUR.1i

9. Input Gain Control: These potentiometers are used to increase the amount of signal voltage to your power amplifiers. With these controls you can provide up to 13 volts (peak) to your amplifier's inputs. Check with your amplifier manufacturer's specs to determine exactly how much voltage they can really handle. If you are using AudioControl components after your FOUR.1i, they can handle the maximum output of the FOUR.1i. More info on this in the section on "Level Matching" - page 11.

10. Output Jacks: Next to the inputs are the outputs which should be connected to the front and rear amplifiers, if applicable. A pair of EQLs and a 3XS would work wonderfully here.

11. Balanced Output Selector: This control allows you to send either a balanced or an unbalanced signal downstream to the next component in line. If the next component in line has balanced inputs (like most AudioControl products) the signal will be protected from radiated noise (up to 55db).

12. Illumination Selection: These jumpers let you change the backlight illumination to green or amber. Given our devotion to protect the rainforest, we have shipped the FOUR.1i in the green mode.

13. Ground Isolation Selector: This feature allows you to change the power supply ground for different systems. When the FOUR.1i is shipped from the factory, the selector is in the fully isolated position (which is generally the best). Alas, not every manufacturer (or installer) devotes so much time into getting their grounds right. Therefore, we have provided other ground isolation options to help if you have ground loop noise (alternator whine) in your system. Experiment with different settings if you run into this type of problem. To change the settings, turn the system off, carefully move the black jumper from the center two pins (Isolated) and move it to either the top two pins (Ground) or the bottom two pins (200ohm).

If you don't feel comfortable with everything you have read up to this point, run, don't walk, to your nearest authorized AudioControl dealer and have them install it. Life is too short to be tearing your hair out over your car audio system.

INSTALLING YOUR FOUR.1i IN-DASH EQUALIZER

Having absorbed everything in the manual up to this point, you probably know we endorse having a professional install your FOUR.1i. Above and beyond having all of the appropriate technical know-how and experience, they have lots of cool tools.

If you are still with us and are feeling confident, then read on. . .

A. Placement and Mounting the FOUR.1i In-Dash Equalizer

Placement: By definition, the FOUR.1i in-dash equalizer was designed to be installed in or near the dashboard of most cars. However, if you are a building a real trick system, like with a separate audio system in the front **and** rear of a vehicle, the FOUR.1i is an ideal pre-amp control that can be mounted in the front and/or the rear of the vehicle.

Mounting: The FOUR.1i is flexible enough to mount almost anywhere, although somewhere on the dash or in a center console is the most logical. You will want to be able to

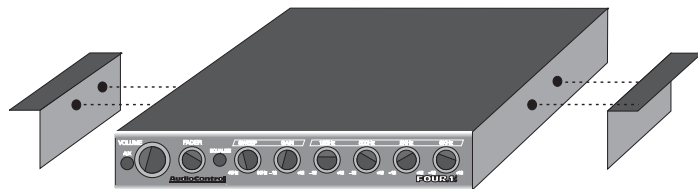


Figure 4: FOUR.1i with mounting brackets

access it while you are sitting in the driver's seat of your vehicle. The FOUR.1i can be physically mounted almost anywhere in a vehicle, although we recommend that you avoid hot spots like the firewall, engine compartment, or tail pipe. The mounting location must also be safe from water seepage or areas with bad seals (rubber gaskets, not sleek furry mammals who eat salmon). If there are old water stains, stay away.

We have also provided brackets to allow you to mount the FOUR.1i chassis under the dashboard or glovebox. The screw holes on the FOUR.1i chassis also allow for easy installation underneath a radio or with a dash kit. It is of utmost importance to mount the FOUR.1i securely to avoid any undue stress or breakage from acceleration, braking or crashing.

B. FOUR.1i Power Wiring

• **ENLIGHTENING INFO** • Disconnect the negative terminal of your car's battery before working on any electrical connections. Failure to do so could lead to a dramatic spark in your life.

Remote Turn-On: Connect a 22 to 18 gauge wire from the head unit's remote turn-on to the "Remote" connector on the FOUR.1i.

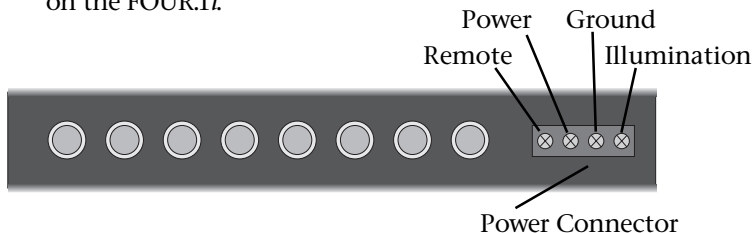


Figure 5: Rear View of the FOUR.1i

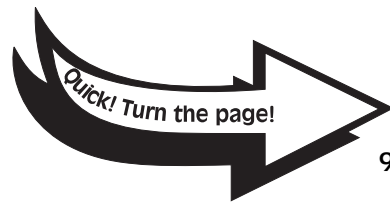
Positive(+12V) Connection: Insert an 18 gauge or larger wire into the connector labeled "Power" on the nifty connector of your FOUR.1i. Connect it to a good, fused, constant source of 12 volts (we suggest the battery.)

Ground Connection: Use the same gauge wire as you did for the positive connector and run it from the "Ground" connector on the FOUR.1i to the negative terminal of the battery, a ground buss, or a verified ground location. The factory head unit ground is not recommended.

Illumination: The connector labeled "Illumination" on your FOUR.1i controls the intensity of backlighting of your FOUR.1i. Connecting it to a switched 12 volt source, such as the "Remote", allows you to light up the backlighting of your FOUR.1i. A really cool idea is to connect the illumination wire to a factory dash light dimmer and have the ability to dim the backlighting of the FOUR.1i with your dash lights.

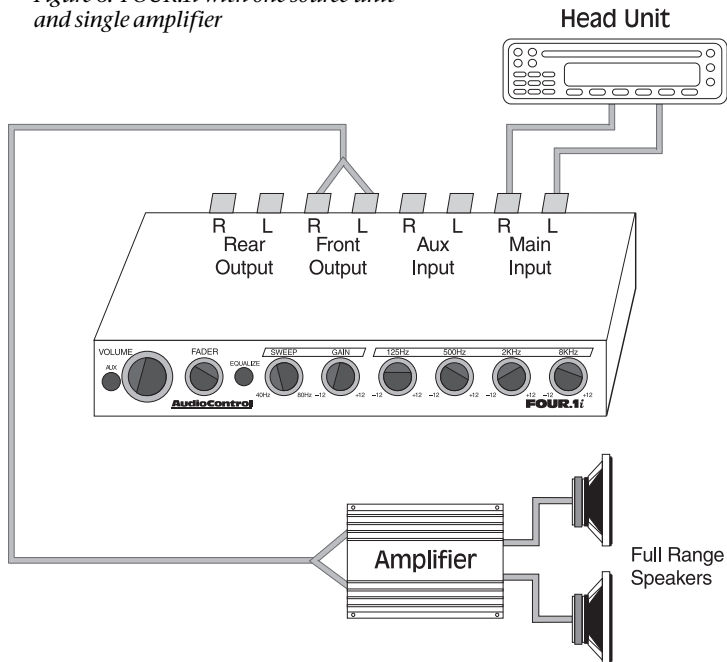
C. FOUR.1i Audio Wiring

Planning: As you may already have guessed, there are numerous ways to configure the FOUR.1i in your audio system. Spend a little quality time planning out your system and even sketching it out on paper if you can. The diagrams on the following pages are just a few of the possibilities.



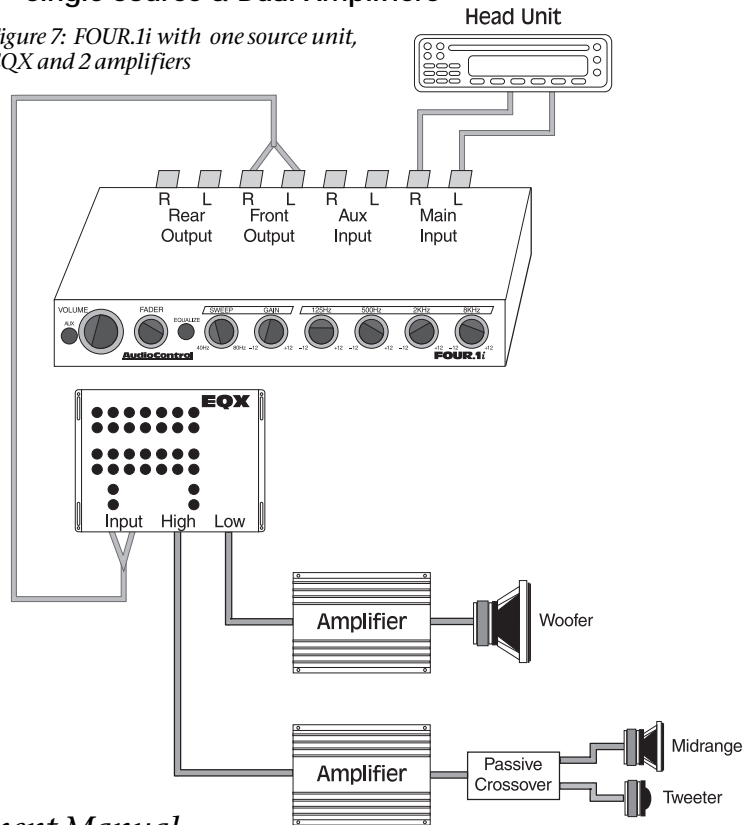
Single Source & Single Amplifier

Figure 6: FOUR.1i with one source unit and single amplifier



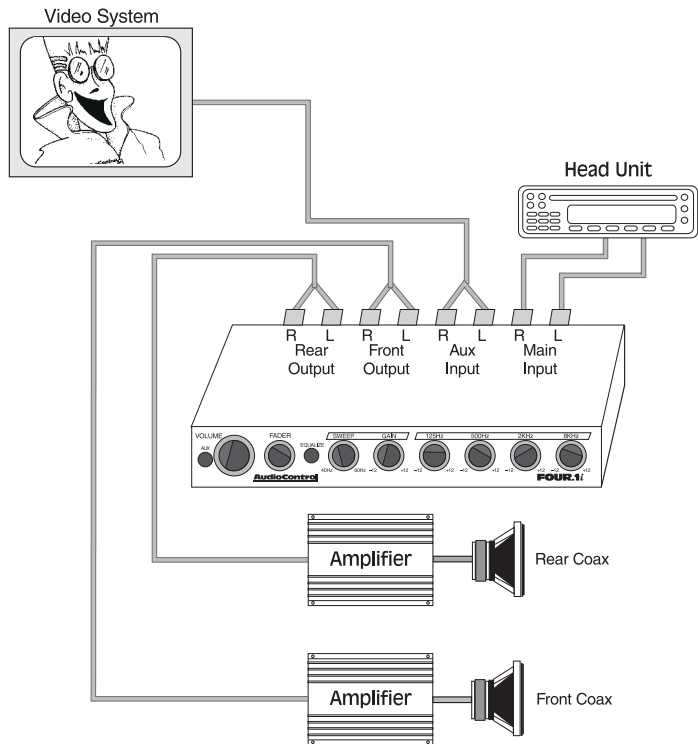
Single Source & Dual Amplifiers

Figure 7: FOUR.1i with one source unit, EQX and 2 amplifiers



Two Sources & Two Amplifiers

Figure 8: FOUR.1i with 2 source units & 2 amplifiers



D. Level Matching

Many manufacturers claim that their source units produce signal voltages in the area of 2 to 4 volts. However, what they neglect to mention is that you only achieve these incredible voltage levels when the volume is turned all the way up. Try listening to that all of the time. By following the level matching steps for the FOUR.1i you will be able to take full advantage of the maximum voltage output of your head unit.

1. Disconnect the RCA cables leading into your amplifiers, and make sure the RCA cables between your head unit and the FOUR.1i's main inputs are attached. Turn the volume level knob on the FOUR.1i to maximum.

2. Play a favorite tape or compact disc that contains consistent, dynamic music and turn the source unit's volume control up to its maximum level. (NOTE: Some source units will produce distortion or "clip", before or when their volume controls are turned all of the way up. If this happens, you will hear distortion even at low levels when you connect the rest of the system. If this is the case, lower the source unit's volume level until you no longer hear distortion.) With the source unit's volume up high, the volume control on the FOUR.1i will be the master volume control.

3. Using a small screwdriver, adjust the “Input Gain” control on the top of the FOUR.1i until the yellow “Overload” LED starts to flicker with the music.

4. Turn off the entire system and attach the output RCA's from the FOUR.1i to the next component in line.

5. Turn down the gain control (counter clockwise) on your amplifiers to the least sensitive setting. This will allow you to drive a hotter signal into your amplifiers. For more info on this, ask us for Tech Note 1006.

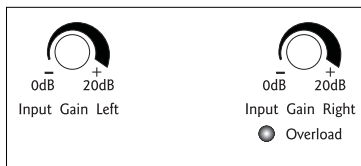


Figure 9: Input Gain Controls

• Important Tip •

If the OVERLOAD light does not come on, because of the low output of the source unit, turn the Input Gain to maximum. Please refer to the manufacturers specifications on input voltage to determine whether you will need to decrease the “Input Gain” on the FOUR.1i to avoid clipping the next component in line. If the next component in line is an AudioControl component, there is no need to re-adjust the “Input Gains”, because they can handle the hot signal voltage the FOUR.1i produces.

E. Equalization Adjustment

Stereo Bands: There are no strict rules to adhere to when setting the main equalizer controls on the FOUR.1i. To our knowledge, the audio police will not come knocking on your door in the middle of the night. Common sense says to use the FOUR.1i to make your audio system sound enjoyable. At the same time don't attempt to re-invent the laws of physics by trying to make your speakers and amplifiers produce things they just won't do. 150dB of bass from 6" woofers and 50 watts of power come to mind.

125Hz: If music in the 60Hz range is considered the “substance”, then 125Hz can be considered the “texture”. Although 125 Hz can be quite boomy, it is an essential part of all music. Use the 125Hz control sparingly, the way a cook uses a seasoning.

500Hz: The 500Hz controls the core of music. Male voices, brass, hollow-body electric guitars and often solo pianos are in this range. Because there is quite a bit of this “midrange” in most pop and rock, you'll probably find yourself reducing this control more than you will boost it.

2kHz: Our ears are most sensitive to the octave centered at 2 KHz. Reducing it can prevent ear fatigue while boosting it will add immediacy, presence and “attack”.

8kHz: The 8Khz control is the sparkle in the musical spectrum. What is sometimes perceived as ear piercing treble is actually much lower than this in the high midrange areas. The tips of women’s vocals, snare drums, some synthesizer, higher brass and woodwinds are in this area.

Para-BASS: One equalization control to cover all your various bass needs...we don’t think so. The unique Para-BASS control in the FOUR.1 is flexible enough to satisfy the bass requirements of audiophiles or true “bassheads”.

Sweep: Pick a frequency between 40 and 80 Hz. The lowest of lows and the frequencies you feel more than hear live in the 40Hz range. If you want tighter, kick in the pants bass, you will probably head more into the 80Hz range. As you change frequencies the Para-BASS control automatically adjusts the bandwidth or “Q” to the optimum level.

TROUBLESHOOTING

| Problem | Suggestions |
|---------------------|---|
| No Sound | <ol style="list-style-type: none"> 1. Check “Power” and remote turn on for proper voltage. (Is power light on?) 2. Center the fader control. 3. Turn up “Input Gain” control. 4. Check ground connections. 5. Is the “Aux” button in the wrong position? |
| Hiss | <ol style="list-style-type: none"> 1. Turn down amp gains 2. Turn down amp gains 3. Turn down amp gains 4. Adjust source unit output |
| Distorting Speakers | <ol style="list-style-type: none"> 1. Adjust equalization levels 2. Adjust gain levels 3. Lower volume level of source unit |
| Whine | <ol style="list-style-type: none"> 1. Check impedance of source grounds to or Buzz amplifier grounds for resistance. 2. Change isolation selection of grounding jumpers. See page 7, #13. |

If You Like The FOUR.1i, You'll Love...

The **Concert Series EQL™** is our award winning dual bandwidth, trunk mount equalizer with speaker level inputs! to you that means easy inexpensive upgrade. Thirteen 1/2 octave and octave spaced bands help tame even the most wicked acoustical environment, your car.



Need a crossover **and** an equalizer? The Concert Series EQX is just the ticket.

The Epicenter™ is More Bass Louder! Pure and simple, It's our patented (U.S. Patent #4,698,842) component, that puts the "woof" back in woofer. You have to hear it to believe it.



The **3XS** is a 4 channel, 2 way crossover with breathtakingly steep 24dB per octave slopes. If performance is important to you, than you will appreciate the 3XS.



Do you like great sound, but you're kind of addicted to the features of your factory source unit? You know; steering wheel controls, clean cosmetics, or maybe the backlighting is just the way you like it. Whatever the case, you are a candidate for The Concert Series EQL.



And now a word from the legal department . . .

The WARRANTY

People are scared of warranties. Lots of fine print, lots of non-cooperation, months of waiting around. . .

Well don't be scared of this warranty. It's designed to make you rave about us to your friends. It's a warranty that looks out for you and helps you resist the temptation to have your friend who is "good with electronics" try to repair your AudioControl FOUR.1i. So go ahead and read through this warranty, then enjoy your new component for a few days before sending in the warranty card and comments.

"Limited" doesn't mean anything ominous. The Federal Trade Commission tells all manufacturers to use the term to indicate certain conditions have to be met before they'll honor the warranty. IF you honor these conditions, we will warrant all material and workmanship on your Concert Series FOUR.1i for FIVE YEARS from the date of purchase if installed by an authorized AudioControl dealer, and will fix or replace it, at our option, during that time. For you "do-it-yourselfers", we offer you the same warranty for one year.

Here are the conditions that make this warranty conditional:

1. You have to fill out the warranty card and send it to us within 15 days after you purchased your FOUR.1i.

2. You must keep your sales slip or receipt so you have proof of when and where you bought your FOUR.1i. We're not the only company to require this, so it's a good habit to be in with any stereo purchase.

3. Your FOUR.1i has to have been originally purchased from an authorized AudioControl dealer. You do not have to be the original owner to take advantage of the warranty, but the date of purchase is still important so be sure to get a copy of the sales slip from the original owner.

4. You cannot let anybody who isn't; (a) The AudioControl Factory; (b) an authorized service center; or (c) someone authorized in writing by AudioControl, service your FOUR.1i. If anyone other than (a), (b), or (c) messes with your FOUR.1i, that voids the warranty.

5. The warranty is also void if the serial number has been altered or removed, or if the AudioControl FOUR.1i is used improperly. Now, that sounds like a big loophole, but here is

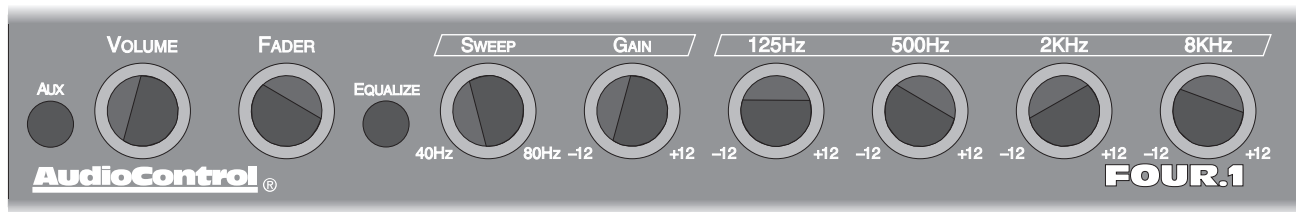
all we mean by it; unwarranted abuse is: (a) Physical damage (our mobile products are not meant to be used as jack stands for your car); (b) Improper connections. We have done the best we can to protect the inputs. However, 120 volts into the input jacks can fry the innards of the poor beast; (c) Sadistic things. This is the best mobile product we know how to manufacture, but if you use it for the front bumper of your Baja bug and get it full of water and dirt, things will go wrong.

Assuming you conform to numbers 1-5, and it isn't all that hard to do, we get the option of deciding whether to fix your old unit or replace it with a new one.

Legalese Section

This is the only warranty given by AudioControl. This warranty gives you specific legal rights that vary from state to state. Promises of how well your FOUR.1i will perform are not implied by this warranty. Other than what we have covered in this warranty, we have no obligation, express or implied. Also, we will not be obligated for direct or indirect consequential damage to your system caused by hooking up the AudioControl FOUR.1i.

Failure to send in a properly completed warranty card negates any service claims.



FOUR.1i SPECIFICATIONS

All specifications are measured at 14.4 VDC (standard automotive voltage) As technology advances, AudioControl reserves the right to continuously change our specifications, like our weather.

| | |
|----------------------------------|--------------------------------|
| Maximum input/output level | 9.5Vrms/13V peak |
| Frequency response | 10Hz-100kHz;±1dB |
| Total harmonic distortion | 0.005% |
| Signal to Noise ratio..... | -110dB |
| Input Impedance | 20Kohms |
| Output Impedance | 150ohms |
| Input gain | 20dB |
| Inputs | switchable 2 source, 2-channel |
| Balanced inputs | Yes (switchable) |
| Balanced Outputs | Yes (switchable) |

| | |
|---------------------------------------|-----------------------------|
| Output ground isolation jumpers | Yes |
| Equalization Cut/Boost | ±12dB |
| Power supply | High-headroom PWM switching |
| Power draw | 250mA |
| Recommended fuse rating | 1 Amp |
| Illumination Color | switchable green or amber |
| Size | 1"H x 6.75"W x 5"D |
| Weight | 2 lbs |
| Country of origin | U.S.A |

AudioControl, Making Good Stereo Sound Better, Performance Match, The Epicenter, EQL, EQX, FOUR.1i, and Para-BASS are all trademarks of Electronic Engineering and Manufacturing, Inc.

This literature was conceived, designed, and written on a bleak, windy, and dreary rain-drenched day at our home in the Pacific Northwest Rainforest. The coffee was hot.



AudioControl®

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