

EQT Specifications

All specifications are measured at 14.4 VDC (standard automotive voltage)

Frequency response	10-20 KHz \pm 1 dB
Total harmonic distortion	0.007%
Signal to Noise ratio (at full output)	110 dB
Maximum output level	9.5 Vrms
Input gain	\pm 18 dB
Output attenuation	$-\infty$ to 0 dB
PFM filter slope	18 dB/Octave
PFM filter frequency	Factory set at 33 Hz Programmable
Power supply	Selectable isolation PWM DC/DC converter
Power draw	350 mA
Recommended fuse rating	2 Amp
Size	1.25"h x 8.9"w x 6.9"d
Weight	3 lbs
Balanced Input	Yes
Output: Ground Isolation Jumper	Yes
Country of origin	USA

EQT Concert Series 30 Band One-Third Octave Constant-Q Precision Equalizer / Preamplifier Owner/Installer Manual

Congratulations!

You have purchased one of the most powerful acoustical tools known to the car stereo world - the AudioControl EQT. This thirty band wonder can take care of almost any acoustic anomaly your car audio sound system can throw your way. Normally, we include a really complete owner's manual with our products. But the EQT is radical...so mind-bogglingly, incredibly, gosh-darned sophisticated that it definitely requires professional installation.

Since many installers generally use owners manuals to line bird cages, we've pared down the instructions to a bare minimum in hopes that they will at least look at this manual. However, since the best installers (like the AudioControl Performance Match dealer who's installing your EQTs) pass all owners manuals on to their customers, we have also included some information for you, the end-user. **WARNING:** We know what kind of awesome systems EQTs go into, so we suggest reading the information before you damage yourself too badly by cranking your stereo.

Here's what you can expect from your EQT:

- **Car Acoustic Problems Solved** - Car interiors vary wildly in size and acoustic make-up. So do doors and trunks, which due to enclosure volumes, contribute significantly to the sound of speakers. Not to mention the literally thousands of different types of speakers available; or all the different placements which are possible. It's mind (and ear) boggling. A couple of EQTs give your dealer/installer the ultimate tools for solving these problems and optimizing the sound of your overall system.
- **Component Line Level Incompatibilities Eliminated** - Unlike home stereo systems, there are no exact standards for car stereo input/output levels. Head unit output levels vary all over the map. Chaos everywhere. The result is often improper level matching which can result in excessive noise or distortion. Your system can now have perfect balance and a great signal-to-noise ratio.
- **Tremendous Sound Control** - Thirty bands of equalization with constant-Q, (see the description on the next page) all engineered into a compact, rugged chassis. The only other environments which usually get the benefit of true, 1/3 octave equalization are recording studios, high-end home theater systems, and gigantic, multi-million dollar traveling concert sound systems.
- **Highest Quality** - Your EQT is built in Mountlake Terrace, Washington USA (near Seattle). Our Performance Match series has regularly won many coveted industry awards for design and engineering excellence. In fact the EQT won the *Audio/Video Magazine Autosound Grand Prix* award almost before it was introduced. It has also been selected as one of the **FIVE BEST CAR AUDIO PRODUCTS EVER!**
- **Envious Friends** - Even if they have an otherwise IDENTICAL system, you can count on your system sounding better. Because even the finest custom system can sound much better with the addition of the EQT.

AudioControl®

AudioControl

making good stereo sound better®

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This manual was written, designed, printed and stuffed into a neat box with a really neat product while fighting a life and death struggle with man-eating banana slugs (considering where we live). P/N794-090

We Interrupt all this Great Bragging and Tech Talk for a Very Important Announcement

FILL OUT AND SEND IN YOUR WARRANTY CARD! Also, save your invoice or sales slip as proof of purchase. These actions will protect your investment and help prove to your insurance company that you really owned one (much less two) of such a great piece of audio gear like the EQT. Just in case somebody "borrows" them while you're tanning in Maui.

Generally Nifty Info for Owners. Installers Already Know all this Stuff . . . or at Least We Hope They Do

Constant-Q Equalization - Obviously, the more segments that the frequency spectrum is split into, the more precise the control over any given segment. But having beau-coup bands is not the whole solution.

Normal 1/3 octave equalizers suffer from variable "Q". Okay, this is an obscure term, even for a lot of autosound professionals. The Q (Quality Factor) is the relationship of bandwidth to the amount of equalization. Time to haul out the charts and graphs and other audio/visual aids.

Figure A is a standard 1/3 octave equalizer set to take a 3 dB notch out at exactly 1000 Hz. When providing 3 dB of cut, the equalizer's Q is:

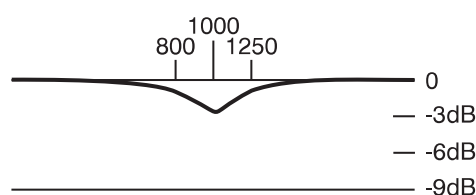


Figure A

After using a 1/3 octave real-time audio analyzer, the uninformed non-AudioControl-aware installer discovers that you really need 6 dB of cut at 1000 Hz. (Figure B)

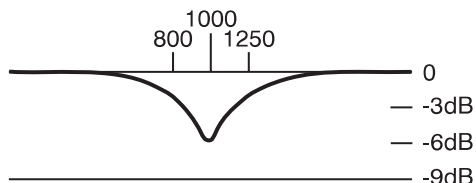


Figure B

Look what happens to the curve in Figure B. The bandwidth has changed because the Q has changed! The increased adjustment at exactly 1000 Hz is now causing effects well past its own third-octave bandwidth. You're essentially getting free, unsolicited equalization at 800 Hz and 1250 Hz as well. The analyzer readout also shows that your pink foam dice hanging from the rear view mirror are causing a 3 dB dip at 1250 Hz. So he boosts this frequency (Figure C). Look what happens! Now both adjustments are interacting.

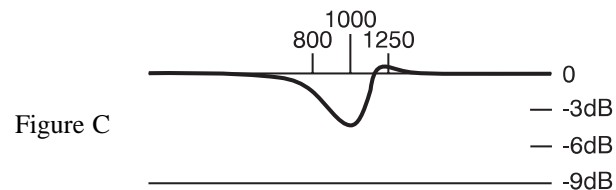
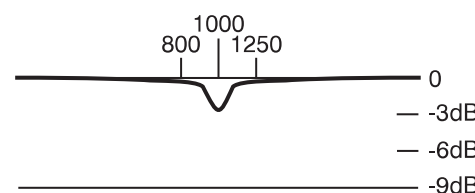
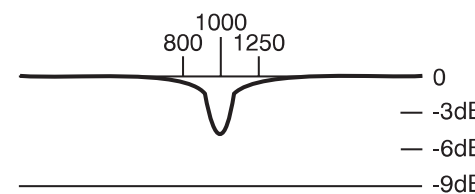


Figure C

Fade out. Fade in to an AudioControl Performance Match dealer as he installs your EQT. First the 3 dB cut at 1000 Hz.



Now a 6 dB cut. The Q, that is the contour, of the equalization has remained the same. That's constant-Q topology at work. No matter how much boost or cut, the adjustment stays right where it's intended. Even when you make an adjustment in the opposite direction right next door.



Previously, this feature was only found on ultra-sophisticated (read very expensive) studio and sound reinforcement equalizers. Which wouldn't even begin to fit in your car even if you had hot and cold running 110 volts AC to power the equalizer.

Features

Level matching - If level adjustments between your head unit, equalizers, crossovers and amplifiers aren't optimal, one or more of the following problems can occur:

- Noise
- Distortion
- ⊙ Apparent Lack of Power
- ⊙ Difficulty in Adjusting Volume

○ Noise is constantly generated by all electronics. The only solution is to minimize it and increase music levels so that they mask the noise.

● Distortion occurs when circuits cannot handle the amount of signal input. In effect, they "clip" much the same way an amp does when you turn it up too loud.

⊙ The inverse of this is a seeming lack of power. You buy a monster power amp, hook it up, crank your CD changer and get disappointed. That happens because the power amp needs more signal input than your headunit can provide.

⊙ An associated problem is when the headunit puts out so much signal that your volume control is rendered almost useless. Dead quiet to shattered windows happens in about 1/8th of a turn of the volume knob. This makes it very hard to adjust the volume.

Theoretically, some of these problems could be solved with the right kind of input controls on the power amps. Unfortunately (for technical and economic reasons), amp input level controls can't cope with the wide range of impedances and output voltages put out by various head units, outboard signal processors, and varying speaker efficiencies (but that's another story).

The EQT solves all the above problems by interposing itself between the line level source and the amplifiers. It's adjusted for optimal input from your head unit and just the right amount of output for your particular amps.

Torpedoing Subsonics - Subsonics are a constant bugaboo with either car or home stereo systems. They're sound frequencies that occur below (sub) the audible hearing (sonic) range. While they aren't audible in themselves, they cause some very audible (and potentially destructive) problems.

The first effect is called *Intermodulation Distortion*. The poor woofer has enough trouble zooming in and out forty to several hundred times a second producing audible bass. When it ALSO has to flutter in and out two to twenty times a second "reproducing" inaudible subsonics, problems develop. The subsonic motion reinforces and cancels the intended motion of the woofer, causing distortion in the bass frequencies.

The next problem subsonics cause is mis-use of amp power. The lower the frequency, the more power it takes (that's the whole point of adding outboard power amps). Reproducing subsonics requires INCREDIBLE amounts of power that aren't there when you want them for audible bass notes. The result is clipping, amp overheating and general bad audio karma.

The final problem is speaker stress. Subsonics can push the woofer past its normal cone travel distance: especially in a ported speaker enclosure. Any sound below the tuning frequency of a ported or bandpass enclosure will cause the speaker to behave as if it was in no enclosure at all. This usually results in turning the speaker cone into shredded wheat.

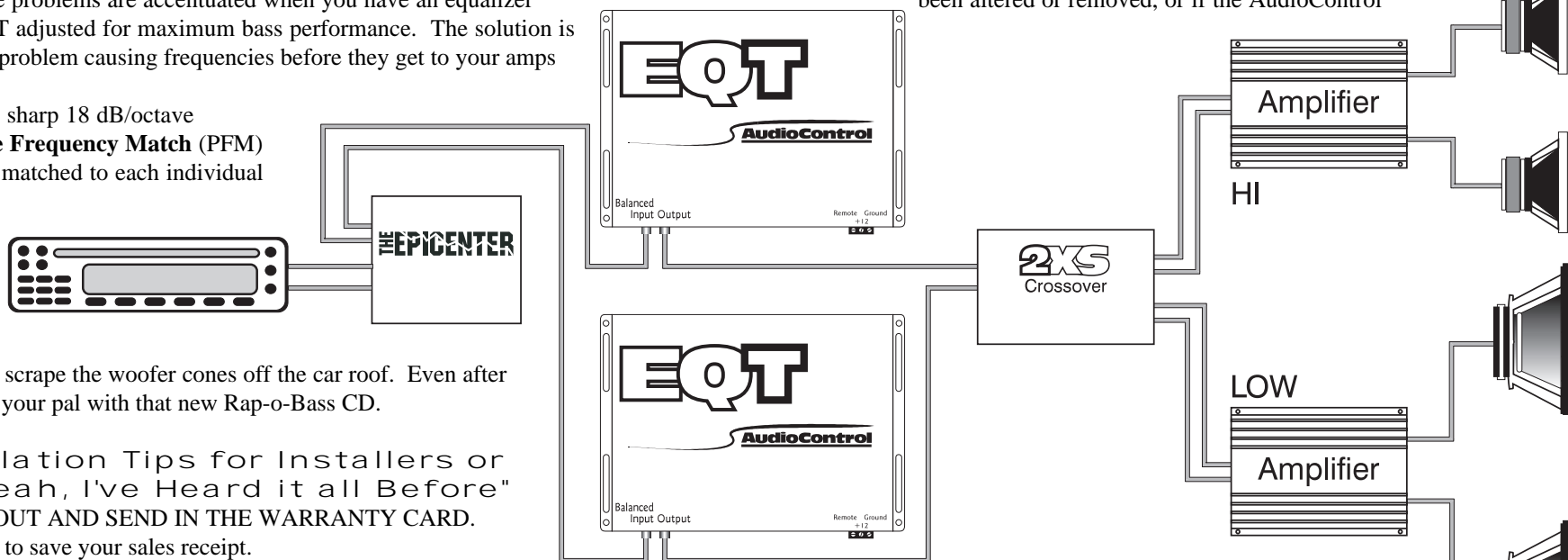
All of these problems are accentuated when you have an equalizer such as the EQT adjusted for maximum bass performance. The solution is to cut off these problem causing frequencies before they get to your amps and speakers.

The EQT's sharp 18 dB/octave **Programmable Frequency Match (PFM)** filter is custom matched to each individual system with a simple programming module: So you'll never have to worry

about having to scrape the woofer cones off the car roof. Even after you blow away your pal with that new Rap-o-Bass CD.

Installation Tips for Installers or "Yeah, Yeah, I've Heard it all Before"

1. FILL OUT AND SEND IN THE WARRANTY CARD. Remember also to save your sales receipt.
2. EQTs should be adjusted with the help of a professional quality 1/3 octave real-time audio spectrum analyzer...Period. Something like the AudioControl SA-3055 one-third octave ANSI class II realtime audio analyzer would work very well. Trying to set the equalizers by ear is like tying your shoes with chopsticks.
3. Set the input and output level controls before making the equalizer adjustments.
4. We know you know this, but we have to put it in. Avoid mounting the EQTs near a heater, on the engine side of the firewall, anyplace they can get wet, and anywhere the mounting screws might pierce a gas, brake, or electrical line. There are a lot of these running around near the trunk.
5. Use a common (star) grounding scheme when wiring your system. Do NOT tap the power or ground wires for the EQTs directly off an amplifier or other system component. Remember what happens in the shower when someone flushes?



Input/Output

Level Control Adjustment

1. With the EQT output RCAs disconnected, set both the INPUT and OUTPUT LEVEL controls to their fully counterclockwise position.
2. Play some music on your system with the volume control turned up to full volume. Remember, since the outputs of the EQTs are not hooked up you won't hear anything.
3. Adjust the INPUT LEVEL controls on each EQT until the INPUT MAXIMIZED LED on both units is just flickering. This is 3dB below the clipping level of the EQT.
4. Now adjust the OUTPUT LEVEL controls until the appropriate voltage is showing on the OUTPUT STATUS LEDs. Two volts is a common level for many pieces of audio gear. Five volts is usually reserved for higher end components. DON'T GUESS ON THIS. Before you set this, check the owners manuals or call the manufacturers of the other equipment in your stereo system to find out what their maximum input signal voltages are.
5. Okay, now you're ready to shutdown the system, hook up the output jacks, and get ready to equalize the car.

and now a word from the legal department...

EQT Limited Warranty

People are scared of warranties. Lots of fine print, lots of noncooperation, 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's good with electronics", try to repair your AudioControl EQT. 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.

"Conditional" 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 materials and workmanship on your EQT for FIVE YEARS from the date you bought it if installed by an authorized AudioControl dealer. We will fix or replace it, at our option, during that time. If you are a "do-it-yourselfer" we will offer the same warranty for a period of 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 EQT.
2. You must keep your sales slip or receipt so you have proof when and from whom you bought your EQT. We're not the only company to require this, so it's a good habit to be in with any stereo purchase.
3. Your EQT 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 five year warranty, but the date of the 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 to service your EQT. If anyone other than (a), (b), or (c) messes with your EQT, that voids the warranty.
5. The warranty is also void if the serial number has been altered or removed, or if the AudioControl

EQT 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 connection. We have done the best we can to protect the inputs, however, 120 volts into the jacks can fry the innards of the poor beastie. (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, 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 EQT will work are not implied by this warranty. Other than what we've covered in the warranty, we have no obligation, express or implied. Also, we will not be obligated for direct or indirect damages to your system caused by hooking up the AudioControl EQT.

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