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The one problematic configuration is a 2-way speaker using a passive crossover where the tweeter is much closer to the listener than the mid. My tip for that scenario is to cover the tweeters during the first of the 4 sets of sweeps for each seating position. That will cause the MS-8 to align based on the output of the midrange, which is important because we use ITDs to localize sounds below 1kHz, and then the EQ will take care of the ILD at high frequencies. Works like a charm.

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MS-8 matches all the channels and tries to maintain plenty of room to avoid digital clipping. If you use MS-8's amp for the center, it'll adjust right and left to match it. same for rears. I suggest using similar power for center right and left. If you use the MS-8's amps for the rear, sent the gains on your amps down a bit, run setup and then adjust the amp gains up by precisely the same amount until you get a balance between front and rear that you like. Same goes for the sub. If the sub "level control" in MS-8 doesn't provide enough bass for you, adjust the amp gain up after you run setup.

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Quote:

Originally Posted by **SSQ** [View Post](#)  
Andy,  
*Can you comment on the need for center and rears if the system design goal is for driver only (not 2-seat or 4-seat)? I would think that the center isn't needed since its primary reason seems to be to provide a center for both seats at the same time. I would also think that there would be improved dynamics by not relying on a smaller mid - which is likely the case for most center channels.*  
*It seems to me that the rears will still serve a purpose though for adding depth. Am I on the right track? Is there a theoretical optimal set-up for a 1 seat wonder?*  
-Kris

Right on all counts. Congratulations.

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Quote:

Originally Posted by **lycan** [View Post](#)  
*two types of centers :*  
  
*1. Leave left & right alone, and add a center (usually simple L+R mix). Usually you want this type of center attenuated, relative to left & right.*  
  
*2. A center where information is "removed" from left & right, and "steered" to a center. In this case, center level should be about equal to left & right level.*

Lycan is right.

In fact, I'd go so far as to say that a mono (L+R) center does more to screw up a good image than to enhance it, unless there's some additional trickery involved in the processing, like crosstalk cancellation, but that isn't available in car audio products.

For 2-channel listening, a matrix processor (PLII or L7) is the ticket, although getting used to listening to music the way it was recorded takes a little while. We're so used to listening to different pathlengths that many of us like the sense of space that those phase anomalies provide.

I did a demo for a well know record producer several months ago of a car with a strong phantom center image and his response was "it sounds mono". the demo was of a track he mixed. We then went upstaris and I showed him exactly how much distinct left and right were actually in the track and he scratched his head.

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Quote:

Originally Posted by **thehatedguy**

[View Post](#)

*Andy, you may have mentioned this to me before, but how important is timbre matching the rear speakers to the front? Do the rears have to be the same quality of speakers as the fronts? And finally do the rears need to be the same size as the fronts?*

The rear isn't critical, but it's really helpful to have something back there. The level that the rears will play with Logic7 will depend entirely on the amount of out-of-phase information in the recording. -180 degrees between left and right steers rear. It's great at steering room ambience in direct to 2-track recordings. Most pop recordings mixed using simple panning won't produce much rear information. Spacey sounding stuff, live recordings and anything you play back as a 2-channel downmix from a discreet multichannel recording may have lots of rear information. If you plan to do much of that, pay at least some attention to getting a decent pair of speakers back there and mount the tweeters at ear level.

The rear speakers should always have a high pass filter to keep them from playing anything below 100Hz. I usually use a 100Hz 4th order filter. So long as the rears can play between 100Hz and about 15kHz, MS-8 will correct the response well enough.

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OK, now that my butt has recovered from 15 hours in the same chair yesterday, here goes.

Every few milliseconds, Logic 7 computes a steering angle by determining a couple of things about the stereo signal. Left, right and center steering is determined by level differences between left and right signals. Mono information--the information that's common to left and right--is steered to the center. Don't confuse mono as L+R for what's actually going on here. Although this isn't how it's done, you could think of the mono info as (L+R)-IL-RI. It's all of the sound minus the sound that appears only in the left or the right. That mono information is also attenuated in the left and the right. The amount of that information that appears in left and right is an important part of making this thing sound great in cars. If the information is completely removed from left and right, then I don't think it works very well in cars. The images are spot on, but they're really small and don't sound believable, to me. If the mono information isn't attenuated at all, then the stage is narrowed a bit and the images are big and kind of nebulous. Left of center and right of center aren't very accurate. Attenuating the mono signal in left and right by 6dB works great and that's what MS-8's L7 does.

The front-to-rear steering angle is computed by determining the phase relationship between left and right. -180 degrees steers to the rear. -90 degrees steers about halfway between front and rear. The level differences between left and right determine rear left and right steering.

Finally, when information is steered front, one of the rear and side channels is polarity-swapped. This helps to anchor front steered sounds in the front, and that's why sides and rears shouldn't make a bunch of midbass. That out-of-phase condition in the back works for imaging, but not for midbass. Fortunately, we all want the midbass to sound like it comes from the front, so it's just easier to make sure that it does.

Side and rear are also delayed by several milliseconds, but rear is delayed more.

Very low frequencies are not steered. They're simple stereo.

Here's a set of drawings that sort of illustrates this. The first one illustrates what you can expect from a L+R center.

►► All posts are by Andy Wehmeyer unless noted ◄◄

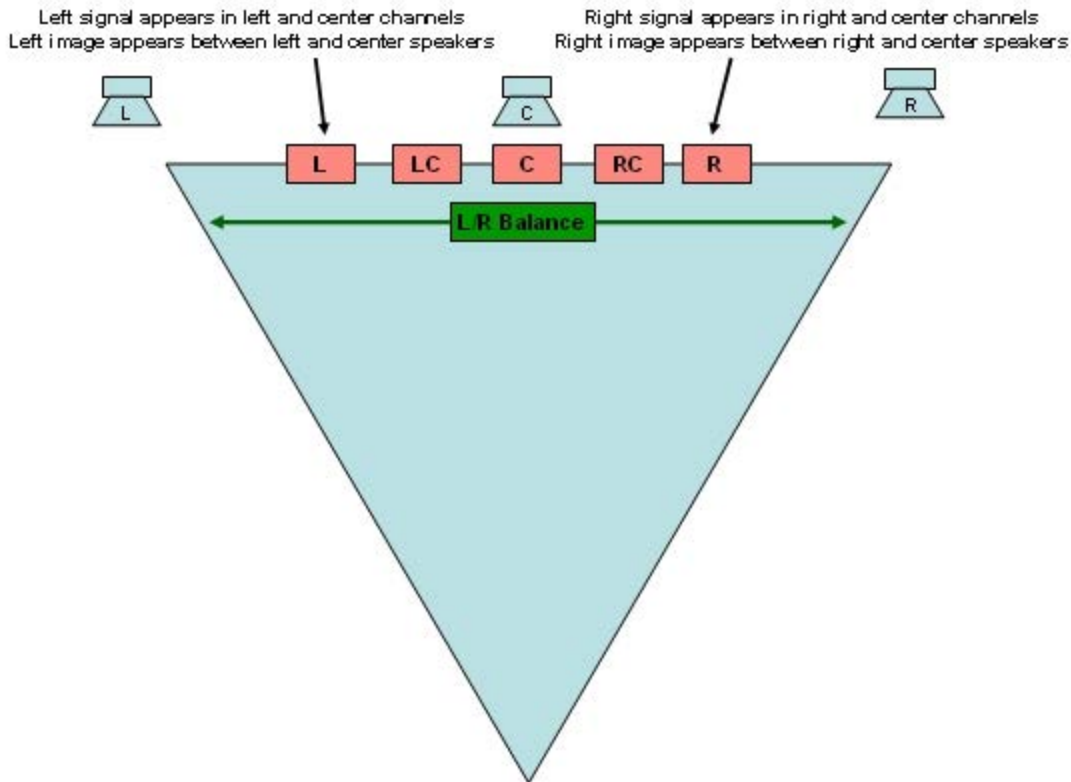


Figure xx. Image steering in a three-channel system with a mono (L+R) center channel

And here's a simplification of what happens with L7:

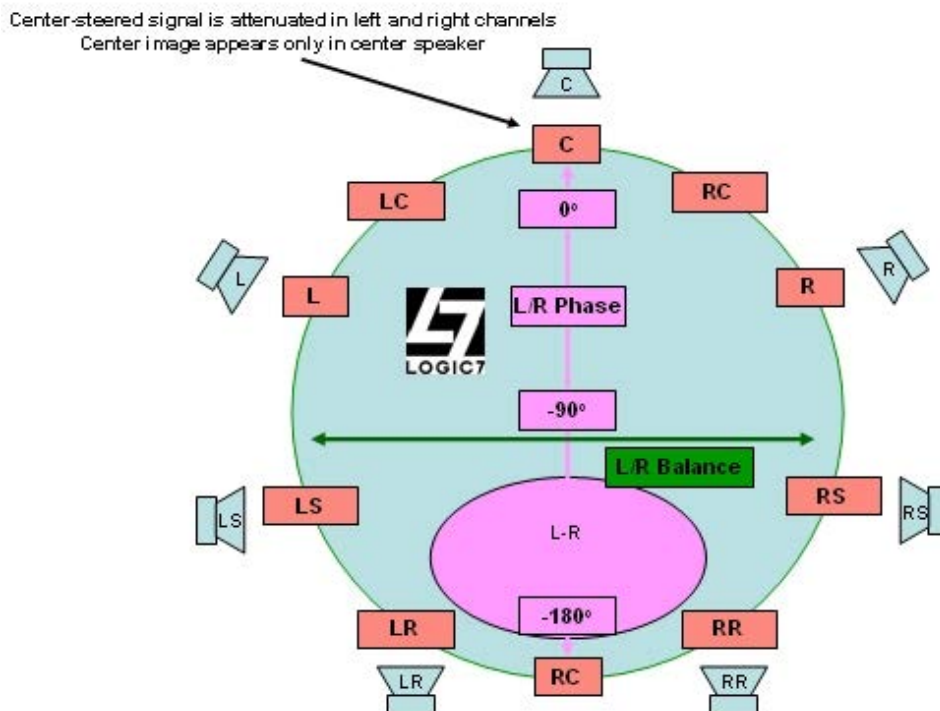


Figure xx. Left, right and center steering in a Logic7 system

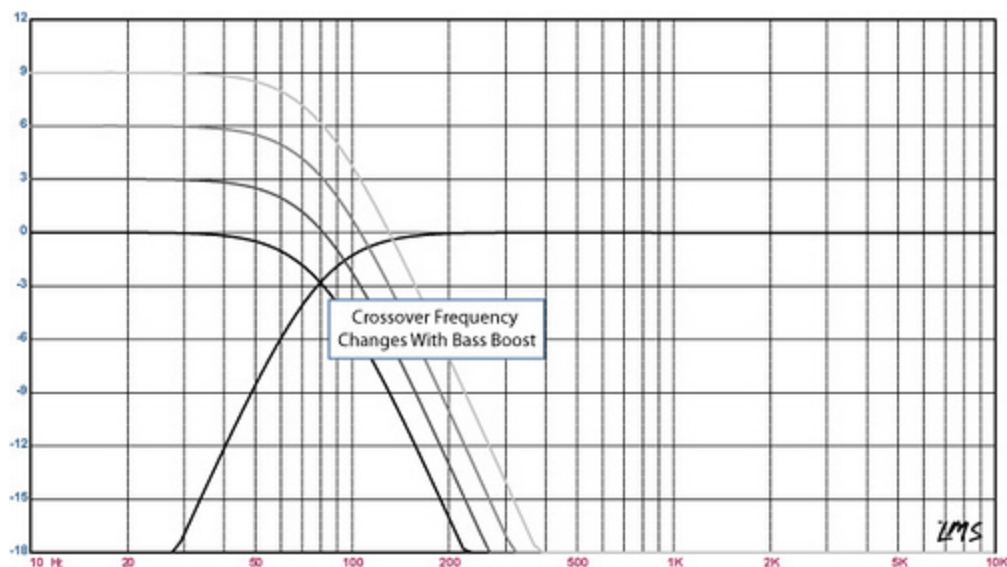
►► All posts are by Andy Wehmeyer unless noted ◄◄

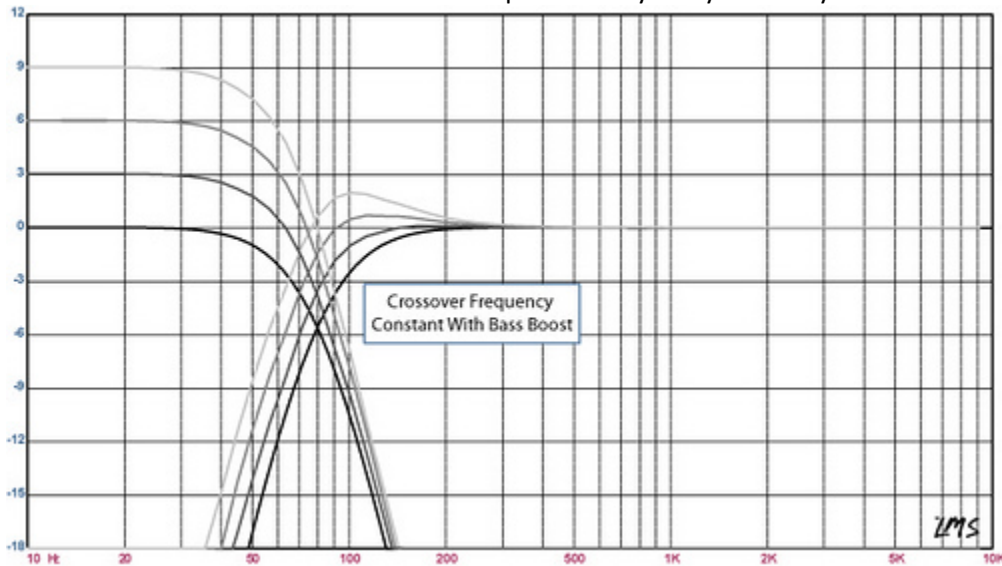
So, when you implement this in a car, here are some pointers:

1. Sides and rears don't have to make bass. I use a 3" and a tweeter in the back and a 6" component system in the sides, but they're crossed over at 100Hz, 4th order. The 6" speakers in the sides are overkill, but that's what fit in the doors.
2. It's helpful if the side and rear tweeters are at about ear level. Don't mount them in the bottom of the doors.
3. If you won't put 4 speakers in the back and you'll use only 2 instead, MS-8 will process them as sides. That's no problem and the difference between 5.1 and 7.1 is really hard to hear. It's nice to have rears and sides if you'll have rear seat passengers. Logic 7 in OE systems mixes some front-steered information into the sides, so the rear seat passengers have their own stage at the back of the front seats. Making those adjustments is car and speaker-location dependent and it's seriously difficult to do without screwing everything else up. MS-8 will provide a single stage, located at or in front of the dashboard for all seating positions. I prefer that and it happens automatically and easily when the front seats are right.
4. Front steering works perfectly for all frequencies that the center channel will play and pathlengths don't matter much. For midbass frequencies that the left and right will play but the center channel won't, pathlengths are critical. A phantom center has to be generated for those sounds. If your center channel is a 3" and you have big-ass 8" speakers for right and left mounted in your doors, there's gonna be trouble.
5. The subwoofer level control in MS-8 isn't a level control for the subwoofer output channels. It's a shelving filter that boosts bass in ALL channels below 60Hz, but never above 160 Hz. When you boost or cut, the slope of the filter is adjusted. This helps to maintain the illusion of bass up front by sending the appropriate amount of midbass to the front speakers and bass to the subwoofers. It also maintains the crossover point. Here are a couple of graphs that illustrate this and why it's better.

The first one is a conventional control. It's pretty obvious why this moves the image of the bass to the back and sounds boomy. There's too much interaction between sub and midbass. This is why people claim that "underlapping" the bass is important and why so many people try to get big-assed midbass drivers in the front of the car and cross the sub at 50Hz. With MS-8, that's totally unnecessary, and the evidence of that is in the second graph.

I use a pair of 6" speakers driven by about 40 watts in the doors, another one in the center channel and a 500 watt amp on a pair of cheesy 10" woofers in an IB in the rear deck. The bass is seriously anchored to the front and the midbass is great. No hassles, no constant tweaking and I can boost bass by as much as 10dB on top of the target curve (which is a total of about 20dB) without the image shifting to the rear. I think my crossover point is about 80Hz, 4th order.





BTW, this feature is also included in the MS-Amps using a wireless rotary control that can be paired to any number of bass and full range amps in the system.

So, for front right left and center, you'd be better off with three 5" speakers (R,L, and C) than with 8s in the doors and a 3 in the center. If all you can get in the center is a 3", then try to move the midbass to the kick panels. If you can't do either, the car will still sound great, but the image for center-steered midbass sounds will be larger than it should be and will be biased a little bit to the side on which you sit. Not such a big deal.

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If you have a bad speaker, you'll be able to detect this during the Output Diagnostics Menu. After you set up your speaker configuration, this menu allows you to send pink noise to any speaker at any level. If your speaker is a 3-way, it'll send pink noise in each frequency band, specified during speaker setup to the appropriate driver.

The filter design algorithm will do the best it can given the data it receives.

If no data is received for a particular speaker, it'll do a pass-thru filter.

If bad data is received, it'll try to compensate.

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All good questions. The 2-channel downmix available on most DVDs is designed to encode the discreet channels into the 2-channel mix in a way that matrix processors can decode. See the diagram above for a clue about how those signals are mixed in. If you were in your living room at home, then there would be no reason to do any of this. The encoded stuff is designed for listening in rooms an designed mostly for movies. The principal objective (as it seems to me) is to anchor dialogue to the screen and provide 3-D effects for movies--flyovers, frog noises all around, dinosaur steps that shake the house, etc. From my perspective, LFE and bass management are fancy terms for "crossover and summing circuit". While they may be complicated to explain and they sound cool, bass is easy and it's even easier in cars.

Some music DVDs are mixed in multichannel so that they place te listener in the audience and some are mixed so that they place the listener on the stage. You can probably guess what my perspective on that is. In any case, discreet algorithms are often panned by music lovers as "non-musical" sounding and I tend to agree, unless the system includes a huge center channel and subs placed all over the room and are tuned differently for music than for movies. Furthermore, I've never in all my life heard a multichannel movie demo that i cared about. I've never heard an explosion or a dinosaur and have no idea what they're supposed to sound like.

MS-8 is designed to make cars sound great, but not necessarily to preserve all the whiz-bang technology that marketing materials for multichannel processors and processes tout. The primary benefit of Logic 7 in cars, considering the overwhelming use case of 2-channel material over discreet multichannel recordings is in center channel processing to overcome the installation headaches of kick panel mounting necessitated by off-center seating. For cars that have a center channel location this is a big deal for a pair of listeners in the front seats. Even for single seat listening, I prefer a dedicated center channel. A secondary and more subtle benefit is the front rear steering and the sense of ambience it provides. This depends on the recording, but I've never wanted to turn L7 off, no matter what I'm listening to. Of course, none of the multichannel stuff means much if there's no room correction, and that's the primary sonic benefit of MS-8. Finally, the fact that this thing can be hooked up to nearly any system is important too.

Logic 7 is not intended to synthesize a room independent of what's contained in the recording. Room synthesis is a separate project and that's why there's a mac Mini in my car--hint, hint...

Compared to what else is out there for making cars sound great easily, MS-8 has no peer, unless you're a seriously accomplished tuner with some tools that aren't available in over-the-counter car audio products.

Quote:

Originally Posted by **hallsc**  
Andy,

[View Post](#)

*In reference to a 3-way setup with rears, you concurred with western47 that the left and right front speakers must have a passive crossover between two of the three speakers each. Is the MS-8 capable of producing a mono (L-R) output?*

*I have a vehicle that I am only interested in setting up for driver's seat; I don't carry passengers enough to care about how it sounds from other positions. My desire for final setup is three-way in the front, two speakers in the rear wired in series with an (L-R) output as described in the huge L-R thread, and a sub. If the MS-8 could output the (L-R) with the one channel, it would be possible for this whole setup to be active, which I would greatly prefer due to intended location of the front speakers causing TA to be a factor. Is this possible?*

*If not, is the processing sent to the rear channels from the MS-8 much more advanced than the traditional (L-R) illusion? More importantly, if the above setup is not possible with the MS-8, under which setup would I get more out of my system (tuned for only the driver's seat) through the MS-8:*

- a). going 3-way partially active (2/3 speakers share passive crossover on each side), a center channel (possibly), two rear speakers, and a sub, or*
- b). going 3-way fully active, center channel (again possibly), no rears, and a sub?*

*Thanks Andy for putting so much time and thought into keeping us well informed of this project!*

My suggestion is to do a 2-way in the front and use two channels for the rears. Since you only need one seat optimized, this will work great without a center. Connect the mids and tweeters on one output (per side) of MS-8. The crossover between them can be outboard active or passive. When you do the acoustic calibration, (the first of the 4 sweeps), disconnect or cover the tweeters so the time alignment will be set of the location of the mids. The tweeter balance will be set by left and right level matching and EQ.

Quote:

Originally Posted by **bhaycraft**

[View Post](#)



Hey Andy,

*Is this going to work well with say the OEM Navigation system with sync from Ford as I really don't want to dump the factory head. I plan to replace all the amplification with JL HD or XD amps and speakers and sub and I am entertaining the idea of adding a center and rear surround on the D pillar of an Extended length Ford Expedition. I might use some of the built in amp from the MS-8 for the rear surround. Thanks*

That's what MS-8 is for. Should work great.

---

Here are a few rules that will hopefully set some folks at ease.

1. If you have a big center channel, time alignment doesn't matter.
2. If you have a small center channel, time aligning the midbass in the doors will be helpful for one-seat optimization. When "Front" is chosen, the midbass may be slightly biased toward the near side. This depends on the crossover point, but won't be a big deal.
3. If you have no center channel, the sound will be great in one seat at a time--like all TA-based systems.
4. Ambient noise isn't an issue during INPUT calibration. It isn't a big issue during acoustic calibration. You don't need to kill all the mice in the building. but it's probably not a good idea to calibrate next to a railroad track unless you can wait until the train has passed.
5. READ THE OWNER'S MANUAL. If you'll use a factory head unit, you MUST run input setup. If you'll use an aftermarket radio, you can skip that part.
6. If the sweeps are too loud, you'll clip the mic inputs and the unit won't be able to determine arrival time coorectly and it will screw up the TA settings. Use a volume level (on MS-8) of -20 for the sweeps if you're using MS-8's amplifiers. If you're using outboard amps, it should be lower than that. If, after calibration, it sounds strange and there's no center image, the sweeps are too loud. Recalibrate (acoustic only) at a lower level. The sweeps don't have to be loud. About the same volume as someone speaking to you while seated in the passenger's seat.

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The head unit voltage thing is outta control.

Here's the deal--we always want to be able to clip the input of our equipment. If you can't, then good recordings that don't include a bunch of dynamic range compression won't sound loud. If you have an aftermarket radio, skip the input setup and calibrate the system. Put in your favorite CD. Turn MS-8's volume control down to about -20. Turn the head unit volume control up until you hear distortion that you find annoying. Turn it down until you're no longer annoyed. That's the max volume setting.

If that's not good enough, then put the setup CD in the aftermarket unit and run input setup. Then the unit will tell you where the level is right. you can write that volume control position on your hand as though you were Sarah Palin so you'll remember it. You can then either finish the input setup, which will run the un-EQ/un-Time alignment routine or you can select "quit" and go back and choose "Skip input setup".

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Center channels need tweeters--or they need to be able to reproduce 10kHz over a fairly wide dispersion.

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When you use MS-8, it may be helpful to adjust your perception of how best to use a crossover. In conventional systems, we often use the crossover to get the smoothest response possible before applying EQ. If you have an RTA, this is probably the first part of the tuning process. The most important part of choosing the crossover is to make sure that you set high pass filters so that the drivers are safe from too much bass. Then, it's a matter of choosing the precise frequencies and slopes to get the best blend between the speakers according to the microphone while setting the levels of the adjacent

bands.

With MS-8, you don't have to do all of that. Just set the crossovers for steep slopes to minimize driver interaction and choose frequencies that keep the drivers safe.

For example, a couple of days ago we put one in a 2000 BMW 3-series with the old amp that has analog filters built into the amp. All we did was add a simple capacitor to the tweeters in the front and rear and connected the tweeters and small mids to the MS-8. We used separate channels for the front midbass drivers and a pair of channels for the subs. Worked great. No need for some complicated passives between the mid and the tweeter.

MS-8 won't fix a stupid system, though. If you use an 8" midbass in the door and a 1" tweeter in the top of the door, it won't fix the problem you'll have at the crossover point due to directivity issues, but neither will a huge collection of tunable filters or overlapping crossovers, no matter how cool the PC interface may be. Bottom line is if you build a competent system, MS-8 will make it sound better than 99 percent of the other processors available whether they have an autotune or whether you or a real acoustician adjust the EQ.

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Quote:

Originally Posted by **Gearhead Greg**

[View Post](#)

*Mr. Michael, how goes it!? I read through it, and thought there was a "done" option after each sample? I too may have mis-read it??*

*ANOTHER question, Andy (thanks so much for all of the answers!). OK, so my sole interest in "rear fill" is to strengthen the front stage. OK, if I could gain a little "ambience", that would be fine too, so long as it doesn't pull the stage towards the rear. Would it then be feasible to run just the rear outputs to a simple rear fill setup (full-range), and go ahead and utilize Logic-7 Processing for music? I just fear that it will sound somewhat unnatural, with noticeable information coming from the rear, if I do so?*

*For the record, my system has 6" mb in the doors and a 4" & tweet in each kick panel. The sub(s) will be located in the rear, of course (re-design in progress!). So, I wouldn't be using a center, nor "side" speakers (unless the midbasses could go that route, but from what I read in the manual, that wouldn't work).*

*Thanks,*

*Greg*

Yup. This will work fine. You'll identify your rear speakers as sides in the setup, but don't let that bother you.

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Quote:

Originally Posted by **Se7en**

[View Post](#)

*Andy,*

*I have a question about the MS8 processing. I've had mine installed for a few hours now and feel like I've lost an enormous amount of system gain/headroom.*

*Using the line level outputs from my factory HU, the MS8 is telling me that the signal is too low until I've turned the volume up to 70% or so.*

*I'm assuming that the EQ is bringing everything way down, but am not sure what it would do in the case of a null. It*



*seems like I have to turn the system up almost to the point of clipping to get it to a reasonable/loud level when driving at regular highway speeds.*

*Thanks for any insight you can offer.*

*On a side note, the staging is excellent, very focused, very high and centered. Tonality seems to be good as well.*

There are a couple of things you can do. The first is turn your head unit's volume control up higher while you listen. Depending on the recording, there will be lots of crest factor or not so much. You can determine the max volume setting with music by turning MS-8's volume down to -20 or so and turning up the head unit until you hear distortion that annoys you. Then, turn it down a bit.

If you're using additional amplifiers, turn the input sensitivity controls down, re-run acoustic calibration and then turn the input sensitivity up on all the amps by the same amount. That ought to fix it.

---

Quote:

Originally Posted by **Se7en**

[View Post](#)

Andy,

*I have a question about the MS8 processing. I've had mine installed for a few hours now and feel like I've lost an enormous amount of system gain/headroom.*

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*Thanks for any insight you can offer.*

*On a side note, the staging is excellent, very focused, very high and centered. Tonality seems to be good as well.*

The input and output calibration are decoupled. When the input goes from LOW to OK, that's a few dB below the clipping point of the input. As Andy said, you can probably go a bit higher than this.

On the output, you can always crank up the gain on your amps before acoustic calibration, but then run calibration at master volume -48 dB (an example). This is like turning a 21 bit calibration -20 dB) into a 16 bit calibration. This will still work well. Then, when calibration is complete, crank the master volume back up.

There's more than one way to do this. I'm just trying to give you more options.

Somewhat related...

Another way to save some dB in the output stage... if you have a position selector in the car already, put it in Front or All instead of Driver. MS8 will have less level matching to do and thus save that headroom.

---

Quote:

Originally Posted by **michaelkingdom**

[View Post](#)

*Hi everyone,*

*I've got the MS-8 running and I am very happy with the sound. It is excellent!!*

*The only issue I am having is that the back speakers sound strange. With Logic 7 on, if I use the fader to play only the back speakers, the sound continuously gets louder and quieter, back and forth like a wave. It sounds like the speakers are being cupped and released. This can best be heard when I isolate the back speakers but when the system is balanced, it is not detectable.*

*When I turn the Logic 7 processing off, the back speakers work perfectly, with no volume stability issues. It only occurs with Logic 7 on.*

*I thought it might be the amp so I changed my amp and had the same exact issue through another amp.*

*Is the Logic 7 processing doing this on purpose?*

*Michael*

*Sarasota FL*

That's what Logic7 sounds like. There's nothing wrong with your system, but listening to surround speakers only isn't much fun. Think of it like this, you're only listening to the "echo" without hearing the sound that produces the echo.

That's not exactly what happens, but it's a good analogy. I think I posted somewhere the whole "how logic 7 works" diagram and explanation, but I can't go find it today.

---

OK... the rears in L7 play loudly or not so loudly depending on what information in the track gets steered to the rear. On some tracks, there won't be much output on others, there may be a lot. Ideally, the rears would be able to play as loudly as the fronts for those times when the recording dictates that they should, but this isn't super critical.

When MS-8 does the calibration, it looks for the rears to be about as loud as the fronts--it level matches them. If you amplify the front and not the back, MS-8 will reduce the level of the fronts. That means that if you've paid for 1000 watts for each of the front speakers and don't want to buy an amp for the rears, you won't experience Logic7 as it's supposed to be experienced. If this is an acceptable compromise because you don't want to buy an amp and you want the front speakers to be loud, then do this:

Turn the gain down on all of the channels that are amplified by outboard amps. Run calibration. Turn the gain on all the outboard amps up by the same amount until you're happy with the overall level. Listen to music. Adjust the fader towards the rear until you get a level of ambience that you're OK with. Listen to lots of different recordings. If you have to move the fader most of the way to the back in order to be happy, thereby attenuating the front, then you'll need to buy an amplifier for the rears to get the level you require from the front and still maintain the front/rear balance that you like.

That's the best way to manage the compromise and to figure out how much power you need for the rears. Think of the output of the rear speakers as a condiment for your sandwich. The Front right and left are the two slices of bread and the center channel is the meat and cheese. If you're a vegetarian or a vegan, this analogy doesn't work for you, so you'll have to do a bit of interpreting.

---

Quote:

Originally Posted by **Thaid and Bound**

[View Post](#)

*From this can we also assume the rears should be able to play full-range?*

Don't use the rears below 100Hz and above 10k isn't necessary.

---

Quote:

Originally Posted by **doitor**

[View Post](#)

*Andy, I just bought an MS-8 from an authorized dealer in the US and should be here by Friday.*

*It will be the first one in Mexico. 🇲🇽*

*Got a question about the rear channels.*

*Would I get better results with the rears on the rear doors or if I put them in the D pillars?*

*I have a Mazda CX-7 with HAT Legatia L831-3 up front, JL 13 tw5 on the hatch and can put either L3's or L4's on the back.*  
*Thanks.*

*Jorge.*

Either would be OK. I prefer to have surrounds mounted at ear level, so I might be inclined to do the D pillars.

---

Quote:

Originally Posted by **Se7en**

[View Post](#)

*Andy, is this based on general principal or specifically how the MS8 would respond to tweeters at different height locations in the car.*

*With my tweeters in the kicks, stage height is very good with the MS8 managing things. Would having a center-dash mounted tweet mess things up?*

*Thanks!*

With the steering, we don't have to be worried about generating a phantom center, so we can use the tweeters to raise the stage and add width--that's what A-Pillars do. If you have good stage height already, mounting speakers in the top of the dash certainly won't screw things up.

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3064

Is an apple better than an orange? It is for me because I can't eat oranges.

The lesson I learned in developing MS-8 is that there are basically two kinds of audio nuts--those who love to listen and those who love to tinker. This site is for audio nuts, not regular Joes. In order to build a great product for you guys, I have to make it appeal to regular Joes too, because there aren't enough audio nuts.

When we started, I told the engineers that I required a back door to the filters because I knew I could do a better job. That was crap, but only partially. Can I do better? Yes, but I have to have a lot of time, a serious analyzer, 10 times the processing power and a bunch of tools that MS-8 doesn't require and that AREN'T AVAILABLE IN THE AFTERMARKET. So, is MS-8 better than me and those tools? As a product that can be sold and implemented by a normal person in a reasonable period of time and for a reasonable cost? Absolutely.

The second thing I learned and am still learning and am hoping to help others learn is that much of the audio babble that so many in the industry spout isn't useful. Is .0000001% THD better than .1%? Yes. Does it matter? Not really--it's damn difficult to hear. Are uber-high-end DACs more accurate than run-of-the-mill DACs? Probably. Does it matter? Not really--it's damn

►► All posts are by Andy Wehmeyer unless noted ◄◄

difficult to hear. Are \$10,000 speakers that are driven with a measly 50 watts more accurate than \$100 speakers driven by the same amp in a car? Probably. What about after EQ-ing for room correction? Does the difference in the speakers matter? Not really--it's damn difficult to hear.

Do I believe that "Good-Enough audio" is good enough? Hell no. But the average experience isn't even close to good enough.

In my 25 years of working in this industry, I've listened to thousands of cars and I can count the ones that sounded great on two hands. Most of them have serious problems and some of the worst ones are IASCA winners. In fact, I'm in China doing a 4-day audio training for a bunch of dealers. Many of them have brought their cars, so we're having a tuning session each afternoon. 50% of these guys have plans to change all the equipment in their cars because they don't sound good. In every case so far, none of the equipment has been the cause of poor performance. In every case, it's the installation, the adjustments or the system design. All of these cars have cool fiberglass boxes, amps, components with tweeters mounted in reasonable locations, but they all sound like ASS except for one. The one that sounded great was the simplest system of the bunch but the guy had actually set the crossover points correctly.

Can I fly all over the world constantly teaching everyone that they have to turn the knob and listen? No. Can I build a product that allows installers to do only what they want to do and to still build cars that sound good? I can't, but with a team of others, we can...and we have. That pays the bills and makes it possible for us to incorporate at least some of the things that audio nuts require.

I've explained a thousand times the differences between BitOne and MS-8. One is a toolbox and the other is a carpenter. Thankfully, there's a choice because if the audio industry only caters to audio nuts, there won't be much of an industry left and the only companies that will be able to afford to continue selling gear will be the ones that can't afford to innovate. Making outlandish claims about passion and high-quality parts isn't innovation. If those are the only companies left, you won't even have a toolbox. You'll have a bone chisel and a rock.

Sometimes you feel like a nut...sometimes you don't.

Here's the deal. In less than 2 weeks, we've sold 473 MS-8s and 25 have been to DIY people. I love you guys and you make this fun for me. The other 450 make this possible.

---

If the staging sounds strange after running acoustic calibration, the sweeps are too loud. Turn down MS-8's volume control and run calibration again.

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*So the internal amp channels are not well suited for use in active set-ups I take it.*

The recommendation is to either run all of the Fronts (L/R/C) off of the internal amps or all off of external amps.

If you mix and match, you will possibly have EQ limitations and will definitely limit your potential output power.

That being said, you can easily run the sides and rears off of the internal amps and the fronts off of external amps.

**Adam S.**

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*So the internal amp channels are not well suited for use in active set-ups I take it.*

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The internal amps are fine for active or passive setups, but they're 20-watt channels at 4 ohms. Driving front midbass and midrange speakers with 100 watts each and using 20-watts on the tweeters just doesn't make a whole lot of sense, unless the tweeters you choose are 7 or 8 dB more efficient than the mids and really are 4 ohm tweeters. I have a car full of these same chip amps--24 channels, to be exact and it's 100% active.

---

Quote:

Originally Posted by **bikinpunk**

[View Post](#)

*I had messed around with logic 7 a bit at first at didn't notice anything really different so just left it on.*

*Then...*

*Answer: Logic 7.*

*Listened to a Madonna track today titled "Live to Tell".*

[MySpace Player](#)

*At different parts of the song, there are (what sound like) key that play. You hear them at the beginning of the track @ 0:23 seconds and a few other times throughout.*

*With logic 7 on the keys don't sound right. It's like they're being cut out.*

*With logic 7 off it sounds fine.*

Logic 7 steers out of phase information to the rear and it samples the music every few fractions of a millisecond. The only channels that are affected by the front and rear steering are the rears and sides. IF you have a center, leave L7 on and fade to the front if you don't like the front and rear steering. L7 isn't perfect and there will be some songs that break the code, but on balance, I think the effect is better than not having it.

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*Andy or Adam, would you please comment on the bluetooth echo issue some people are reporting?*

I don't want to get into details right here.

But, Andy thinks he has a solution. When he gets back from China, we'll review.

We're aiming at a solution where when someone calls, you hit the Mute button, and it turns off certain functionality so that BT works.

Maybe a tristate Mute button:

Music->Mute->BT->Music

Or maybe a sub menu that lets you choose whether the Mute button is BT or audio mute.

With a standard PC laptop, you can update MS8, but we'll get into that later.

---

Hey everyone,

I'm now back from China. We'll get on this bluetooth thing ASAP. Obviously, a software fix will be faster than a fix that requires hardware. The issue is undoubtedly delay through the processor. While a completely transparent solution is our goal, a 100% reliable solution is more important than a completely transparent one. Sorry for the hassles.

If those of you who are having trouble would please PM me or Adam the make model and year of your car, we'll get on those use cases first. If any of you that use bluetooth are NOT having trouble, knowing which cars are OK will greatly help with this investigation.

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Quote:

Originally Posted by **xr4tic**

[View Post](#)

*I'm still having the same issue, no bass.*

*I've got my sub amp gain cranked to full, but when playing music the mid/bottom end is real faint, and it just sounds like crap.*

*If I turn processing off, it's all there, but of course the phantom center is gone.*

MS-8 is designed to provide bass that's 9dB above the rest of your response. If you like a lot of bass, that's probably not going to be enough for you. When you do acoustic calibration, turn the sub bass amp DOWN. Then, MS-8 will boost the bass a bit. Then, after you've finished, turn the gain on your sub amp up. During the sweeps, if the sub sweep rattles the trunk, it's too loud. If you can feel the sub during the sweeps, it's too loud.

There is one other possibility, especially if you have a little sealed box and you're using a really low crossover point--if that's the case, MS-8 is trying to get rid of the HUGE peak in your response.

---

The out of phase voice should steer to the rear. That's what Logic7 does.

MS-8 isn't going to get rid of the bass you feel, but it will get rid of bass that's more than 9dB above the rest. This is why I keep saying to turn the bass amp down during calibration and then turn it back up. MS-8 is designed to make it sound like the bass comes from the front, if possible. That can't happen if the bass is 20dB above the rest of the system. If you don't care about the placement of the bass, but you want a ton of it, then take my suggestion. Turn the gain down, run calibration, turn the gain up

---

Oh, several of you have asked about the effect of different mic angles on the result.

Here's the scoop. The first measurement in each seat is for TA. The processor uses the average of the two mic placements, essentially the point midway between your ears. You should look straight ahead for that measurement.

The second through fourth measurements are for frequency response. The difference in the response between the mic that's closest to the speaker that's being swept and the one on the other side of your head is head masking of high frequencies. If you turn your head really far for the third and fourth sweeps, there will be less high frequency content in the measurement and MS-8 will EQ the treble accordingly. At much lower frequencies, there won't be much difference. If you're using tweeters in the sail panels, you'll notice a difference between different head angles, as frequency response from the tweeters affects localization at high frequencies. If your tweeters are in the KPs, there will be less difference.



The Microphone MUST be unplugged after calibration is complete. The microphone is multiplexed on channels 4 and 8 and there's some leakage at low frequencies. This isn't a problem, unless you leave the mic plugged in. This is why the display reads "Unplug the microphone" after calibration is complete. Or at least I think it does.

---

The user adjustments aren't used during the sweeps. So this is no problem.

I should add that the target tuning is designed to provide the illusion that the bass is up-front. Of course, it takes more than just EQ to do this. The levels have to be right, the woofer shouldn't make a bunch of high-frequency distortion and there can't be a bunch of rattles when the sub plays. The sub control is designed to preserve this illusion insofar as it is possible while adding a bunch of bass. If you don't care about that illusion and require much more bass, the appropriate and most successful "user adjustment" is to increase the gain of your subwoofer amplifier AFTER the autotune has done its work. I can't stress enough the importance of doing auto calibration at a low-enough level.

There is no subwoofer sweep during the first set of sweeps because we don't time align the subs--it isn't necessary and it's damn difficult to do with a peak picking algorithm. If the sub sweep is too loud during the frequency response measurements, then the sub EQ will either load an erroneous file or it won't EQ, depending on the error. There's no advantage to EQing at the loudest possible level and the range of appropriate levels is really wide. The measurement is also nearly impervious to extraneous or ambient noise (within reason), so this isn't something that has to be managed carefully during calibration, so long as the sweeps aren't too loud. I don't recommend parking next to a train track and calibrating as a freight train passes, though. Finally, all the sweeps are normalized in the algorithm, so the results of EQ at different but similar levels will be similar. The difference between a loud sweep and a soft one may be a different set of filter coefficients, but the result will be very similar. If you're noticing a big difference, then the sweeps are too loud and you're probably maxing out the available boost or cut.

Finally, if you're using outboard amps and one band of frequencies is much louder than the others, then the same thing may happen--you'll max out the boost or cut or the unit's ability to level match. The window is wide, though--there's plenty of boost and cut available. If you're using outboard amps, I suggest setting the input sensitivity of all of them for about 2V and letting MS-8 do its work. If that's not loud enough for you after calibration, turn all of the amps up by the same amount.

---

Quote:

Originally Posted by **yuri** [View Post](#)  
*i have post this question on erin's review tread ,but maybe i should of posted here ,,soorry.*  
  
*erin ,andy*  
  
*or anyone know if its possible to run the ms-8 .*  
*3way (6ch) up front ,mono sub(1ch) and use the 8th channel for a band passed mono rear fill ?*  
  
*maybe even you could use the on-board amp on the ms-8 to power the rear fill ..*  
  
*if possible it would be interesting to see if it added ambience to the sound stage depth ?*

Rear fill has to be stereo. That's how L7 works. If you don't have enough channels, combine the front tweeters and midranges and use a passive. That works fine.

---

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*Andy, you keep stressing that the sweeps need to be done at a low level but "low" is completely subjective. Can you give us a decibel estimate from measuring in YOUR car when you do the sweeps?*

**Between 85 and 90 dB is good. Could even be 80-85 dB. NOT LOUD--including the sub.**

---

Yeah, you can't just throw some drivers in the car in a shoe box or two, hook up MS-8 and expect to get great results. One other thing to remember, especially for DIYers, is that speaker sensitivity makes a big difference in where input sensitivity controls have to be set. I keep writing that setting sensitivity to about 2V on all the amps is right, but if you choose some midbass that's 93dB at a watt and a meter, a midrange with a giant peak at 2k with a sensitivity rating of 90dB and a tweeter with sensitivity of 82dB, then the gains will have to be set appropriately.

The car contributes more to the system's frequency response than the speakers do, and the car doesn't change when you replace drivers. Basically, MS-8 has to scale everything to set levels. If your midrange has a 20dB peak at 2k and that's the tallest peak, everything else will be scaled as a result. The window is big, but it's an algorithm. It makes decisions based on a bunch of rules and those rules are written assuming a reasonable system. So long as the system isn't a basket case, MS-8 works great. If your system is a basket case, then it won't. The difference between a basket case with an autotune and a basket case with a toolbox and a tuner, is that the tuner can look at some huge problem and go after a fix that isn't EQ-related, like choosing a different driver, a different location for the driver or a different crossover frequency. Of course, MS-8 can't do that. If it could, we might have named it "Midas".

If you're starting from scratch, just build a simple system and put the speakers in the stock locations, especially if you'll have a center channel. If you already have some custom thing going on, you may have to make some adjustments in the way you've managed compromises in the past to get great results with MS-8. Things like line drivers, additional EQs in the signal path, fiber optic signals, mono rear fill, 4-way all-active systems and balanced line connections are all things that may raise compatibility issues. That doesn't make them wrong or make MS-8 wrong, it just means they may not work well together.

I always try to be straight with you guys and one thing I can say for sure is that many of these things that are added as "features" to traditional gear often include outlandish claims of performance enhancement or some other benefit in the interest of distinguishing just another amp from other just-another-amps or just-another-speakers. Most of it has some technical merit, but the merit may never be experienced because the benefit appears outside the audio band, because the benefit overcomes a technical problem that isn't audible (and certainly isn't annoying), or because the benefit is BS but can't be adequately disproven because it's designed to appeal to one's emotions or to dupe you into believing that there is merit by making the signal louder and claiming to make it "better", "more transparent" or my favorite: "effortless". Anthropomorphism is damn difficult to overcome once people are bought in to the hogwash

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If you're connecting to a factory system that includes a subwoofer and you're connecting the subwoofer output to the input of MS-8, the sub output of the factory system should be connected to MS-8's input 7 or 8. In order for MS-8 to sort out the right and left and mono channels and to remove the factory time alignment, it has to see a high-frequency channel before a low-frequency mono channel as it samples the incoming signals.

The outputs of MS-8 can be connected in any order or configuration that's supported. That means there have to be right and left front at a minimum and that rears and sides are stereo. Front can be maximum of 3-way...etc...that's all in the manual.

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Debug Tip of the Day:

Using the Test Menu. I thought I would just publicize it since I have had to give it out to a few of you anyways. We never

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intended to make this accessible to end users, and you won't find it in the manual. So please only use it if you really need to, and be careful, as there are no crossovers protection your speakers and the volume is not controllable by master volume.

1. Go to the main menu
2. Hold down the left arrow for 2 seconds
3. Hold down the right arrow for 2 seconds
4. Repeat 2 and 3 several times if this doesn't work. It's intentionally a bit difficult to use.
5. Now you have access to a Display Test (for pixels), a pass-thru test (useful for debugging), and Aux test, and a pink noise per channel test called 'Output Diagnostics'

Display Test: just flashes pixels on and off, not really relevant

Pass-thru: Inputs 1-8 go to outputs 1-8. Make sure your source volume level is way down. The DSP runs at 0 dB during this test and volume control doesn't work here. Don't use this test with a tweeter, as crossovers are also not used here. It's literally pass-thru.

Aux: Aux Input goes to Output 4/8. The other channels are pass-thru. Same precautions apply.

Channel Diagnostics: Pink noise for any channel. Again, no crossovers, no volume control, so turn your amps way down if you plan on using this. You might be able to use this to compare levels if you have some built in crossovers in your amp.

After using this Test Menu, \*Do Not\* hit back and then Calibration. You need to turn off Remote In and then turn Remote In back on before doing a proper calibration.

Please PM me if you have any questions, but remember, 0 dB all tests and no crossovers.

**Andy S.**

---

For those of you who are having trouble integrating the bass with the midbass, here are some tips:

1. The Subwoofer level control in MS-8 isn't a gain control for the sub output. It's basically a target curve adjuster and boosts or cuts bass with a filter that mimics the low-frequency end of the target curve. The target curve includes 9dB of boost below 60Hz with a smooth transition to 160 Hz. The subwoofer level control is a shelf that boosts or cuts below 60 and never above 160 (the slope of the filter changes with the amount of boost or cut. Use it to adjust the level of the bass before going after it with the 31-band EQ.
2. If you're using a factory head unit and your factory system has a subwoofer, disconnect the subwoofer output of the factory amp from MS-8's input and re-run input setup. This will work great if your factory midrange speakers are 6", but not in BMWs with 4" midrange drivers. MS-8 includes enough boost to put the bass back in so long as the factory crossover is near about 80Hz. The reason that this is important is that in many cars with factory subwoofers, the front speakers and the sub crossover aren't well aligned and the electrical combination of the two create a huge dip in the response that MS-8 tries to fix with boost. MS-8 can't determine if the dip is caused by a big "underlap" or because the two signals are out of phase at the crossover (because of alignment of the crossover frequencies and slopes).
3. Reverse the polarity of the subwoofer and re-run acoustic calibration.
4. If any of the first three don't do the job and you're using a little sealed box and your sub amplifier also has a crossover, set the amp's crossover to about 60 or 70Hz. This will change the overall response of the sub by reducing the boomy midbass it makes (which is picked up by MS-8's mic and used to set the sub bass level). Then, run acoustic calibration again.

And, if you're having trouble getting a center image, the sweeps are too loud or one midrange/midbass is wired in reverse polarity. Verify the polarity by plugging a source directly into the amp that drives those speakers and playing a mono signal

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or use a 1.5V battery and check to see that the speaker moves forward when the battery + is applied to the speaker +. Simply checking the wires may not be sufficient, especially if you're bridging a 4-channel amp to drive the two speakers. If you used the B.S. "put one midbass out of phase to fix the image" trick for two-channel systems, you have to eliminate this for MS-8-based systems. It's a B.S. fix, anyway.

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Quote:

Originally Posted by **jrsmiles**

[View Post](#)

*Maybe I've been reading too much, but I've confused myself. I've set my gains to about 25%, HU volume at 35/40. MS-8 volume at -40. Now I've run the acoustic calibration, and the listening volume is too low. I want maximum clean gain for each set of speakers, and a high sound level from the system.*

*How do I increase my gains now to get the output voltage I'm looking for? I'm planning on using a multimeter per JL's instructions on how to verify gains, but I need to know I'm hitting the inputs on the amps with the high end of the limits in order to get an accurate gain output reading. What should the MS-8 level hitting my amp input be? -40? -20?*

*Thanks for the help, I've read through most of this thread and haven't seen any detail about verifying amp gain with accuracy, just some quotes about "turn it up from there". I'm sure there is a fairly simple answer.*

Too much has been made over the years about gain and level setting. Some years ago, systems were made up of a head unit, an EQ, separate electronic crossovers and then amps. Setting levels in these kinds of systems was important, but we no longer use so many analog components in a lengthy signal chain. In a system like that, each component should be driven with the highest level possible before the outputs OR the inputs are clipped. and the signal sent over the wire should be maximized to maximize the signal to noise ratio. The reason for all of this was noise. Too much INPUT sensitivity and too little output voltage would result in system hiss and would boost the level of engine noise, which would be amplified by every component in the chain.

We no longer have to be so concerned with all of that because systems now are often a head unit, a signal processor of some kind and some amplifiers. Additionally, components now often have differential inputs, which are designed to eliminate the possibility of engine noise.

So, with MS-8, the analog signal from the source is converted into a digital signal in the unit before anything else happens and we've designed the unit to make setting this level as easy as it can be. The RCAs are fixed input sensitivity and are designed to work with all aftermarket head units without any user intervention. Just plug them in and go. The unit, without EQ, is designed to provide unity gain up to 2.8V, which is plenty. That means if you put 1V in, you get 1V out. If you put 2V in, you get 2V out. If you put 9V in, you'll get 2.8V out but it'll be seriously distorted. When you turn the output of your radio down so that you send 2.8V, you'll get 2.8V that isn't clipped.

Now, one of the reasons that all of this input sensitivity setting procedure was developed and that many of us suggest things like 10dB of gain "overlap" is because a system that can't clip doesn't sound very loud, especially with recordings that have a high crest factor and little dynamic range compression added to the final mixdown. You **want** your system to clip, but you want to balance that with the amount of noise (hiss) you allow the system to produce. You **don't** want **much** of this clipping to be digital distortion, because that sounds bad.

If you're using a 4V head unit with MS-8, that provides 3dB of gain overlap. You won't hear much distortion unless you listen to sine waves recorded at 0dB with the volume control turned all the way up. With normal music and the head unit's volume control all the way up, only the transients that are recorded at 0dB will be distorted, but only by 3dB. You won't hear that and if you do, simply backing the volume control of the head unit off by a couple of notches will take care of it.

Since the MS-8 is designed to provide unity gain, it's sufficient to set the input sensitivity of the amplifiers to the same setting as the output of your head unit for 0dB of gain overlap between MS-8 and your amps). This will ensure no input

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clipping of your amplifiers and will ensure the least noise possible. Double the input sensitivity will result in an additional 6dB of gain. So, if your head unit is a 4V unit, you can set the input sensitivity of the amps to about 1V, which will give you a total of about 9dB of "overlap". Precision isn't required.

Because MS-8 also has a volume control, you'll have to manage how you use it. You don't have to use the MS-8 control if you'd prefer to use the one on your radio. If you choose to do this, then you'll need to set the MS-8 volume control at some level that allows the right amount of "input sensitivity" but also allows enough digital headroom for the EQ inside of the MS-8 to operate without running out of bits (that causes digital distortion). I suggest setting the MS-8 control at -6dB to -9dB during listening, unless you boost the bass in MS-8. If you boost, then you should set it lower by about the same amount as you boost and then use your head unit's volume control.

If this isn't enough "gain" for you, then turn the amplifiers up after calibration by the same amount to maintain MS-8's "tune".

You can determine the point at which your radio outputs about 2.8V by putting the setup disc in your aftermarket radio and running input setup. The point at which you get OK OK OK is the point at which your radio outputs about 2.8V. You can continue to run input setup and MS-8 will Un-EQ and remove any channel delay. If you're using an aftermarket radio, none of that should be necessary so all of the EQ filters will be set to unity. That means what comes in goes out. If you choose "skip input setup", all of the filters will be set to unity.

When you run acoustic calibration, MS-8 will set all of the output levels according to the acoustic response in the car. This takes into account the sensitivity of the drivers and their frequency responses. Some outputs will be increased in level and some may be decreased. So long as there's no hiss, the output level and the input sensitivity control of your amps don't matter. Let MS-8 do what it does.

When you run acoustic calibration, the output of the system can't clip the mic, or things will be ugly. If the mic is clipped during the first set of sweeps, the unit won't be able to locate the initial peak in the response and it won't set time alignment correctly. You'll know this is the case, because there won't be a center image. This is all the volume control setting for acoustic calibration is doing--making sure the system doesn't clip the mics. To ensure this, turn MS-8's volume control DOWN. If you use MS-8's internal amps, -20dB is the highest setting you'll need. If you're using additional amps, you'll have to turn it down MORE. -40, maybe. This setting doesn't matter too much in terms of the final outcome, but the level does change the way MS-8 will boost and cut, because everything has to fit in a "window". The window is big, though.

This is no different than tuning with a regular EQ. If you boost all the bands to fix holes, you'll have a super loud car and you'll probably have lots of clipping and noise. You'll also probably boost in the interest of filling holes caused by acoustic cancellation, which may overdrive your speakers and cause additional distortion. MS-8 tries NOT to do this, but it can't know for sure. If your response has big holes because you're using an 8" midbass and a 1" tweeter and the wrong crossover point, you may hear distortion because MS-8 is boosting as much as it can to fill a hole that can't be filled. Fix the speaker system. MS-8 can't make gold out of crap.

If, when you're tuning with a manual EQ, you cut all the bands to remove peaks, then you'll reduce the output voltage of the EQ at frequencies where you've cut and you'll probably want to readjust the input sensitivity of all of the amps to increase the level of the whole system to make up for it. If you think about it, this is how we all tune systems anyway. So long as you don't introduce a bunch of system hiss, this is fine. Cutting a lot and boosting a little is the best method. This is how MS-8's algorithm is designed to work. It works well, but GIGO still applies.

Once acoustic calibration is complete, if you want to use your head unit's volume control, set MS-8's volume control to -6 and go crazy. If you boost a bunch with MS-8's EQ or sub level control, you may have to turn MS-8's volume control down to leave more digital headroom for the boost. This isn't a defect. This is how digital EQ works. Some digital EQs normalize the response. That would result in everything else being reduced in level as you boost the bass (or the EQ). We didn't do this

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because it adds complexity to the system and the result of boosting with these systems when you reach the level at which there are no more bits available is counterintuitive.

If you want to use MS-8's control, do this: Put in a music disc, turn MS-8's volume control DOWN to something like -40 or -50 (so you know you're not clipping the outputs of MS-8 or your amps) and turn up the head unit's volume control. When you hear distortion, you'll know you're either clipping the output of the radio or the inputs of MS-8. Turn the head unit's volume control down until you don't hear any more distortion. This is the maximum usable output of the head unit for MUSIC and for that particular disc. If you listen to another disc with more or less dynamic range compression in the recording, you may find a different volume control setting produces **audible** distortion. This is related to our ability to hear distortion on transients, the length of the transients and how often those transients are repeated. The idea here is that you have control over the amount of clipping you allow. It is what it is and balancing the two volume controls will help you get the most from your system. I think the vast majority of systems will be fine.

The bass can't clip the mics during sweeps 2-4 either, because the EQ doesn't know what to do. Be sure that the level of the bass is LOW during the sweeps. If you have twelve 15" woofers and you want to wake the neighbors, turn the amp gain WAY down during calibration. The bass should be heard during the sweeps, but you shouldn't feel it. Then, after calibration, turn the gain of the amp up until you're happy. You can't wake the neighbors and have 40dB more bass than mids and highs and maintain the illusion that the bass is in the front of the car, which is what MS-8 is designed to do. You'll have to adjust the gain of the amp to get what you want, because MS-8 tries to eliminate what you want. Let MS-8 do what it does, and then make your adjustment afterward.

Finally, if the system doesn't play loudly enough, adjust the amplifier input sensitivity control to increase the overall system level. There's no need to use a meter or a scope. Just adjust them all up or down by the same amount to maintain MS-8's EQ and relative level settings. The VMM method won't work because there's a bunch of EQ applied to the signal, which increases and decreases the output voltage at different frequencies. BTW, the VMM method is only slightly more accurate than just setting by ear.

Don't be confused by all of the "this has to be precisely set to get the most from your system" garbage. If there's no noise (or the noise is low enough that you're not annoyed by it) and your system plays loudly enough, then things are set appropriately.

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The difference between 5.1 and 7.1 is VERY difficult to hear. Even if you have 7.1 speakers, I suggest running sides and rear in parallel and bi-amping the front (either tweeters and mids or midbass and mid/tweeter).

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Marco,

I'm glad it's working now. Processing on will usually be less loud than processing off, because the EQ prefers to cut rather than boost. This is a fundamental principle when equalizing. In cars it happens even more often, since the midbass and lower midrange is always too loud. If there's a big difference between the results after running input setup in your system, this suggests to me that the head unit includes some equalization or some channel delay.

Covering the tweeters MAY improve imaging if:

1. The tweeters are ONLY covered during the FIRST set of sweeps for each seat
2. If the tweeters and the midranges are connected to a passive crossover and not driven by separate MS-8 channels
3. If the tweeters and the midranges are mounted in locations that provide VERY different path lengths to the listening position.

It's a tip, but not a requirement.



I'm not sure what you mean by "sensible". If you're using a center channel, TA isn't nearly as important as if you aren't. However, since you're currently using a passive crossover for all three speakers in the doors, the difference between the location of the tweeter and the location of the midbass is big. For the first set of sweeps, try covering both the tweeter and the mid. That way, MS-8 will locate the midbass. I think you may prefer to connect the sides and rears together and bi-amp the front.

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The RCA inputs will clip at 2.8V. You can run up to 15V on the speaker level inputs. Of course, the output voltage of your head unit depends on the level at which the music was recorded and the volume control position.

---

If you use L7, it's important to have at least one set of speakers in the back. Without them, the sounds that steer rear will simply disappear.

---

Quote:

Originally Posted by **jimbno1**

[View Post](#)

*You don't plan on a sub? If so you are a channel short. Same kind of boat I am in.*

Use a passive crossover on the center channel.

All 8 input channels are summed, so no retaining of the factory fader control.

With L7 off, front and rear are the same. With L7 on, the rears and sides play ambient sounds contained in the recording (defined by the phase relationship between right and left channels) only.

Sides and rears are assigned in pairs. There's no mono rear supported as one of L7's benefits over other matrices is that it can resolve left and right in the back.

You can only define rear channels after you've defined sides. If you have 2 speakers in the back, they are sides. If you have four, you can enter the ones in the rear doors as sides and the ones in the rear deck as rear. Don't sweat the difference. There's very little performance advantage of 7.1 over 5.1.

---

Guys,

If you're using an aftermarket radio, there's no need to use the additional 6 RCA inputs on the unit. If you're using a factory radio, then you should use the speaker level inputs and connect to as many channels of the factory system as is required to provide the MS-8 the entire front right and left signal plus the output for the sub, if there is a sub. We left the additional 6 RCA inputs intact in case there are cases where the output of the factory system doesn't provide enough voltage to register during setup or in case there's a need to sum speaker level and RCA level.

The owner's manual and the quick start guide are written as instruction for installing the system and making it work. They aren't intended to explain WHY everything works. If we had written that, it would be hundreds of pages long and it seems that even a relatively concise quick start guide is too much to read and follow.

Get this, we had a local (soCal) dealer install one for a reviewer. Took the veteran installer 16 hours to install it incorrectly for which the dealer charged us \$1700. Finally, Gary Biggs had to fly out here while I was overseas to check it out and ultimately, turn the volume down during calibration.

Quote:

Originally Posted by **Niebur3**

[View Post](#)

*Anyone else? I have one person saying 3-way with mid in the pillars and 1 saying 3-way with mid in the kicks. I read what was written by Andy about Logic7 that was posted above and the way I read it, I should put my MB in the kicks instead of doors, or possibly not even do MB up front and just do Midrange? I am so confused at this point!*

Don't make this more difficult than it has to be. The biggest center you can fit is best, but so is not having a big box on top of the dash or mounting the center channel in the back of the console.

MS-8 is designed to send what can't be reproduced by the center channel to the front doors. Obviously, you want the center to do as much as possible, and the image for lower frequencies that the center can't reproduce will depend on time alignment--it'll be a little better in one seat than the other.

Use what you have and use the 4 in the center. Be careful not to try to make the center play lower than it can. Start with a 200Hz crossover frequency on the center and 80 Hz between the doors and the sub. 80-200 that's steered to the center will instead be sent to the doors, so you won't lose anything. It'll be fine. Changing the doors won't have any effect on the center.

Finally, speaker matching for center and doors isn't necessary. Frequency response matching is, but that's what the auto EQ does.

What will SUCK is if you cross the center over at 80 Hz if it can't reproduce those frequencies, because the steering of the low frequency center information depends on the crossover point you choose, not on the acoustic response of the speaker.

---

Sure, there are advantages of a three way, but they have nothing to do with the performance of the center channel. They DO have something to do with dispersion and making up for the near-side off-axis response of the bigger driver. I use a three-way in my car and won't go back.

The reason I suggested what I suggested is because I seem to recall reading that a stock appearance was a primary concern for the poster.

I suggest hooking up what's in the car now. Tuning it, making an evaluation of the shortcomings and fixing those once they are known.

---

There's no need to connect side and rear speaker outputs to the inputs of MS-8. Depending on what the factory system does, it could be detrimental, although it's unlikely. If there's a great deal of delay on the sides and rears, compensating for that delay chews up processing power unnecessarily, for example. Just disconnect them. Use the front and sub only. Calibrate the input with the CD and then do acoustic calibration. If you're using additional amps, MS-8's volume control should be much lower than -20. Try -30 or -35 to start and set the input sensitivity on the amps to 2V. If you're not sure where 2V is, look in the manual for the sensitivity range and estimate or call the amp manufacturer.

---

I suggest turning L7 off if you DON'T HAVE REAR SPEAKERS and using it IF YOU DO. The level setting algorithm is designed to match the levels of the front, center, rear and side speakers and to set the subwoofer level about 3dB louder than I like it. That means that when you turn off L7, you'll have to adjust the fader toward the front if you want front stage and a little sound from the rear without L7.

For those of us IASCA peeps who are used to front with no rear, the rears will sound too loud without L7, but to a non-competitor who likes to have sound from everywhere (my dad), this will sound great. For those super-technical bonus-point-scooping competitors, adjusting the fader a few notches to the front ought to be a pretty simple adjustment, but it sounds better with L7, so why not just turn it on?

---

Quote:

Originally Posted by **MikeF**

[View Post](#)

*+1 for this suggestion. Maybe a thread "Andy's/Adam's best tips" going from basic (I guess the manual here) configuration to/thru advanced tips to highlight certain features - some of which may have universal application ... some of which may be issue specific.*

*I've just recently had mine installed, and I'm not fully realizing the width and (especially the) depth I was led to believe was created by this unit, although this may be somewhat source specific. I've overcome the extreme right-side center-image by over/under positioning the "look at the outer mirrors" during the acoustical measurement stages to a degree, but I'm starting to realize some commonality between the driver/passenger/front positions of the MS-8 and the listener position choices available from the DEQ-9200 I had in my M3 system ... with the passenger setting seemingly positioning the center more toward the center than the driver position does. I also just had the tweets added to the rears (Focal 165 KR's) which my installer originally did not put in (although to his credit he did pre-position the x-over for future enhancement), but the Logic 7 ON seems to bring everything up front. The receipt and utilization of the calibration disc seems to have helped some, but I'm still left wondering.*

MikeF,

The calibration disc is ONLY for input setup. If you're not using a factory head unit, you don't need it. If you're having trouble getting a good center image, the sweeps are most likely too loud. If MS-8 is powering the speakers, start with the MS-8 volume at -20. If you have additional amps, start at -30. If you have a sub connected to an additional amp, turn the gain down. If you're worried that the sweeps aren't loud enough, then that's about the right level--especially the sub.

The first set of sweeps set the time alignment and the last three set the EQ. Time alignment mostly determines the center image position, but bad EQ can screw it up too. Try acoustic calibration again. Just do the driver's seat to start, until you find the right level for the MS-8 volume control.

---

Logic 7 steers the entire signal to the left, right and center speakers. Bass below the center channel's crossover frequency is sent to the right and left speakers and bass below the right and left speakers' crossover frequency is sent to the sub. You can use a small center speaker, but it's important to cross it over in a range where it still provides good output, because the bass management depends on the crossover frequency you select.

Put the biggest speaker you can get in the dash for your center, but it MUST include a tweeter and a midrange. Installing ONLY a tweeter in the center is a mistake. Someone will chime in here and tell you that a "widebender" is a good idea. It's easier, but the "no tweeter necessary" pitch for wide-band midranges is marketing hooey.

---

Quote:

Originally Posted by **Salami**

[View Post](#)

Andy

*I can't find the exact post but you mentioned about using the crossover in the sub amp during the sweep to help deal with*

*the peak during the sweep. I have a small sealed enclosure and am trying to to get a crossover point between 50-65hz with little success.*

*Are there any other options if the amp does not have a built in crossover? Can I put an external crossover in front of the amp during the sweep or will this make it worse?*

*Thanks*

Try this: Rather than attempting to get an actual crossover at 55 or 60Hz, try 80Hz and 24dB/octave. Once the calibration is done, use the 31-band EQ to cut frequencies between 50 and 100Hz if the bass sounds too boomy and to boost below 50Hz. You may also want to listen carefully with the subwoofer connected in reverse polarity.

Quote:

Originally Posted by **AWC**

[View Post](#)

*Damn. What would be the optimal set-up for this? I ask because my oem rear speaker location is "wide" from the listener's position. I think it may be a good location for creating a wider stage. I've already re-done those positions to be in the very rear of my hatchback to minimize PLD's.*

*Would 7.1 be beneficial? The main loss I would think is the separate time alignment for the midbasses but isn't time alignment somewhat unimportant with a well tuned center channel? I'm all about lowering stress on each driver to reduce distortion, I realize its one of the biggest benefits of having a center channel if you're going to have a lot of power.*

*Running the passives as a single channel also gives the benefit of bridging the amp that feeds the two. That would be, for my amp, 600 watts per side.*

*The weak point for most set-ups with this many amps would probably be DC power, but if that's covered, would the added power not be the bomb?*

*Why is it that 7.1 is not covered much in these conversations?*

*Andy, what is your take on 7.1 VS 5.1 with two way front?*

5.1 with 2-way front is better than 7.1. If you want sides and rears, connect them in parallel.

Out of phase information in the recording will be steered to the rear. In acoustic or direct to 2-track recordings or recordings designed to recreate a live event, this information will mostly be room reflections. Steering those to the rear works pretty well in terms of creating good ambience. The algorithm is similar to PL2 in the steering of signals to the rear, but L7 has some other goodies that make it possible to resolve rear left and right (something not done very well by other algorithms) and another feature that helps to plant front steered images in front. The difference between rears and sides is an additional few milliseconds of delay.

Quote:

Originally Posted by **Duper**

[View Post](#)

*What volume are you doing the sweeps at? You might be running them too loud and clipping the mics in the headphones.*

That's what this sounds like to me too. Choosing "Front" instead of "Driver" will essentially shut off time alignment for left and right, so you'll hear the speakers instead of an image.

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If you have a good center image with the unit in "Driver" then the first set of sweeps aren't too loud. And the midrange and high frequency sweeps probably aren't too loud for sweeps 2-4. I suspect the subwoofer sweep is too loud. Turn the sub amp way down and try again. Alternately, try configuring a system without a sub until you get the hang of tuning MS-8. Then, add the sub and make sure the sweeps are quiet--especially the sub.

---

Quote:

Originally Posted by **thehatedguy**

[View Post](#)

*I seem to remember Andy saying that too.*

*And to be honest, I don't know which way I like better. Seems like controlling the dissipation gets a more focused image but lacks ambience.*

*I don't know which I like better...but I do know I love the multichannel experience.*

The point is that in a car, you CAN'T control the reflections enough. If you were able to eliminate them, then you'd have only direct sound. That's like listening in an anechoic chamber, which is a horrifying experience.

The reason to "spread the chaos around" is because the listening area is so small, that we can equalize the sound of the speakers and the sound of the car with one set of filters, so long as the direct sound bears some resemblance to the reflected sound. The myriad of shapes and surfaces prevents these from being exactly the same, but if the reflected sound doesn't have enough high frequency content to be similar to the direct sound, then this EQ doesn't work very well.

Take a 6" component system with a crossover point that's too high as an example. If the crossover is designed so that the on-axis response is flat, but the off axis response has a big hole at the crossover then EQ-ing for the average will provide a big peak in the on-axis response and a smaller hole off axis.

There's no ambience in a car unless you create it using rear speakers and some delay. There is "spread" which is what happens when direct sound is combined with reflections and both reach your ears at about the same time. That's the reality of small listening spaces. With horns, there's less spread because there are fewer high frequency reflections from boundaries that are ADJACENT to the mouth of the horn. The reflections from the boundaries near your ears and behind you don't contribute ambience because the car is too small, but they do alter the frequency response.

Widebanders are good when you want to build a super cheap almost full range speaker for a dollar. That's what they're for--cheap computer speakers. They have no place in a high-quality audio system. They have wide dispersion at low frequencies and narrow dispersion at high frequencies (relative to their diameter) just as all speakers do. Asking if they're good enough is a little like asking if putting only a little rancid ketchup on your burger will really make it taste bad.

---

Quote:

Originally Posted by **vector**

[View Post](#)

*after using the MS8, i want to suggest some minor improvements ...*

*page 11 of the manual, should have additional space so that the user can write down the crossover frequency and slope.*

*the interface should allow you to review and change the crossover settings without having to do an entirely new setup. you should be able to get pink noise from each channel, not just front left / right (i had the tweeter and mid switched around and it was a bit hard to tell as both were playing at the same time).*

*that is all. would seem to be an easy firmware update too ...*

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I'll send you a new piece of paper and a pen.

Unfortunately (or fortunately, depending on your POV), MS-8 won't allow the user to change crossovers without a new system configuration from the beginning. It builds the system as a serial process. Since the auto EQ also adjusts the crossover and tunes according to the acoustic output of the system, changing crossovers invalidates the EQ. That's why you have to run calibration again if you change the crossovers.

---

Quote:

Originally Posted by **Vitty**

[View Post](#)

*Could someone shed some light on this question....*

*If the MS-8 is supposed to sum all the input signals and I am tapping the high level inputs AFTER my factory amplifier for FL FR, SubL and SubR, if the factory amp removes some frequencies from its output signal, does the MS-8 lose these frequencies or does it somehow try to fill them in? My main concern is the subwoofer output on my factory Bose amp. Is there any chance Bose could have a subsonic filter on there which is actually much higher than what my current setup can play? If so I would assume I am losing out on this signal....Am I correct in thinking this, and is that a situation Bose would have possibly done?*

This is a common misunderstanding. Crossover don't completely remove frequencies. They remove them gradually and the rate at which they are removed is the crossover slope. MS-8 includes plenty of boost and cut capability in the UN-EQ, so the answer is that MS-8 will put them back in unless the slopes are really steep and you're missing a wide band of frequencies.

No OE systems do this, though, so you should be fine with your connection scheme.

---

Quote:

Originally Posted by **Matt R**

[View Post](#)

*The 180° phase shift is at the crossover point and lessens the further you get away from it til it gets back to 0°. Reversing the phase of the speaker will make a small bandwidth "in phase" at the crossover point but the further you get from the crossover point it will go towards 180° out. The bulk of it would be out of phase.*

*It seems like it would make sense if you had a very small bandwidth of one driver for it to be 180° out of phase at 12db because the bulk of the freq played would be in phase.*

*You have a 3 way, you could prolly go 6db linear phase if the speakers are close to each other with great success.*

Hey Matt,

I don't recommend gradual slopes in cars for crossovers. For infrasonic filters, they work fine. 1st order linear phase crossovers are OK in rooms where we hear mostly the sound of the speaker and less of the room since the reflecting surfaces are far away (inverse square law). In cars, the reflecting surfaces are very close and also close to the speakers. the frequency response of the speaker matters only a little in cars, because the car's response governs. For this reason, it's best to keep speakers from overlapping--prevents even more sources from playing the same frequencies. Plus, it helps to eliminate the high frequency cone distortion modes from polluting the off-axis response, which makes EQ more difficult. This is especially effective for a 3-way system in the front.

---

No, you don't have to go active. The deal with covering the tweeters is that ALL automatic time alignment setting algorithms look for high frequency content to determine the location of the speakers. If you use passives, then MS-8 (like all other devices) will locate the tweeter, because it has more high frequency content. Covering the tweeter causes it to locate



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the mid, which is where TA is most beneficial. Then, the EQ will fix the "image" at high frequencies, which is more effective anyway because we don't hear phase differences very easily at high frequencies.

Disconnecting or covering the tweeters for the first 4 measurements is definitely not correct. Only the first in each of the seats.

---

Quote:

Originally Posted by **tdrcrew**

[View Post](#)

*I tried that trick (by using towels) but it didn't make any noticable difference...*

a single layer of towel is just grille cloth--not thick enough to block the sound. Use a piece of cardboard or some tape.

---

Quote:

Originally Posted by **Joker\_927**

[View Post](#)

*Yes you can. And thanks for the recommendation in freqs. I actually disconnected the sub while parked and WOW, no bass whatsoever is coming from my mids. I was simply hearing the sub and thought it was coming from the front.*

MS-8 is designed to provide the impression that the bass comes from the front. If that's what you heard, then it did it's job. From your post, it sounds like it did it's job well enough to fool you.

If you want your mids to make mre midbass simply because you want your mids to make more midbass, then that's what the 31-band EQ is for...or, you can move the crossover down, which will cause your front speakers to move more--that may not necessarily sound better, though.

If you don't care about the illusion of bass up front and you just want a bunch of midbass and don't care about the placement of midbass sounds in your stage, then boost the midbass in the 31-band EQ (as you've done) and turn up the input sensitivity on your sub amp.

Getting the illusion of bass up front requires a precise EQ and a particular EQ curve. that's MS-8's target. Fortunately for those of you who prefer a different target, MS-8 has a cool tool to allow you get what you want--the 31-band EQ.

---

There's another question that I'm getting pretty often and that's about connecting more channels than MS-8 needs.

If you have an aftermarket radio that provides two fullr range channels out, that's all you need. Can you hook up more? Yes, but there's no benefit real benefit and it just makes the DSP work harder. Consider this:

If you hook up two full range channels and the subwoofer output, then you'll have the ability to control the level of the bass from the head unit. Maybe this is convenient. However, because the subwoofer signal includes a low pass filter, it will be 180-degrees out of phase with the front signal at some point in the transition band. When you run input setup, MS-8 includes an all pass filter that will put them back in phase--problem fixed...until you adjust the level of the bass. Then, the transition band changes and the phase filter is no longer valid. Is this a big problem? No, but why create even a small one? MS-8 has plenty of work to do even when things are pretty straightforward. MS-8's subwoofer control sounds much better than doing it this way, anyway.

In an OE system, which is what the UN-EQ was designed to fix, the subwoofer level is never adjusted in this way. All of the

frequency controls are EQ rather than levels for separate crossover bands.

If you have an OE system with 6" speakers or larger in the doors, don't even bother hooking up the output of the subwoofer amp to MS-8. MS-8 has enough EQ to put the bass back in if the crossovers in the front are anywhere close to 100Hz. IN some cars, the fronts have NO high pass filter and the sub is just there for additional bottom end. This is really bad system design and creates all sorts of phase errors (one of the reasons that none of us like our OE systems very much).

This is a little like making a sandwich for someone who tells you, "Please...just two pieces of bread, some mustard and one slice of ham". So instead, just to make sure you get everything, you put on 10 slices of ham, three pieces of cheese, a squirt of ketchup, a big dollop of mayonnaise, some lettuce, an onion and a tomato on top and say, "I just wanted to make sure we didn't leave anything out, take off what you don't want." Can all of that other stuff be removed? Yeah, for the most part...sort of.

---

Or...it could be that a centered soundstage isn't what TDCrew is after. Some folks like to hear the speaker locations rather than an image.

I've done demos for music producers who claim that time alignment makes the music sound "mono".

---

Guys, most recordings are nearly mono with a few things going on in the right and left. This is one of the reasons that MS-8 has a center channel level control. If you like less center, you can turn it down. If you don't have a center and you don't like the way time alignment sounds and you think MS-8 sounds better with the processing off (especially in terms of imaging), then you don't like time alignment and aren't used to hearing true stereo.

Very interesting...I never would have guessed. I guess the next product should have "audiophile mode" and "amusement park mode". That's not meant to denigrate anyone who doesn't like audiophile mode. I like amusement parks--there's nothing better than a good roller coaster. 😊

---

Quote:

Originally Posted by **UNBROKEN**

[View Post](#)

*Curious myself....as I'm putting my mids and tweeters on the pillars now and won't have a center channel.*

Lemme see if I can draw something that will better explain why a-pillars blow unless you have the knowledge, ability and processing tools to properly manage the reflection off the near side glass.

This isn't about whether it works with MS-8 or not, it's about "whether it works". Winning a contest in Pee Dee, Arkansas doesn't validate the hypothesis that suggests a-pillar locations are best.

Oh, no offense intended to anyone here who lives in Pee Dee.

Even with nutso processing and serious analysis tools, it's a crapshoot at best. One thing is for certain with mids and tweeters in the a-pillars, though, the image will be above the dash. This idea that you can get them perfectly on-axis and that on-axis placement is important is borne of a lack of understanding about speaker dispersion.

I can't do this today, because I'm killed with other stuff. If you're working on a-pillars but haven't cut the original parts up yet, find something else to do for a little while. You might change your mind.

Quote:

Originally Posted by **subwoofery** [View Post](#)  
*Andy already said many times to use the midbass low in doors, kicks or under the front seats, midrange above the midbass location (still in doors) and tweeter in the sails.  
Also use each speaker below its beaming range and you should be good - no aiming required if used below beaming 🤖.*  
  
Kelvin

Yes, this is right.

Quote:

Originally Posted by **quietfly** [View Post](#)  
*well i might re-ask this in a separate thread so it doesn't get lost/buried.  
I might be completely wrong here, so i'll just reserve the right to say oops.  
From what i understand about DSP's is they can not tell the difference between first and second order reflections.  
apparently there is only so much DSP can "fix" . Essentially by introducing extra second order sources all coming from the windshield, the amount of work that any DSP needs to do is summarily increased. Plus if we take in to account how we perceive what we are hearing, auralization, we may get much more complicated of a "picture" than we first intended.  
Essentially the K.I.S.S. principle, keeping it simple will lead to less clutter all around. that being said i've heard some AMAZING systems with tweeters diffusing in to the windshield.*

Getting warmer--this one is on the right track. However, the reflection issue has little to do with DSP. basically, automatic TA can't effectively make a judgement call about what is the true source of the sound, but building a system that a DSP can't figure out doesn't mean the DSP isn't smart or that the design is advanced or better. MS-8 is designed to make good systems sound better. In order to qualify for MS-8 definition of "good" certain principles have to be considered and even followed. This one is a pretty complicated one and one that isn't so obvious.

I'll try to get this done as quickly as possible, but I'm having fun watching posters here zero in on the problem.

Here are a few tips to speed the course to a solution.

1. Sound is attenuated by 6dB for every doubling of distance from the source.
2. We use level at high frequencies to determine the direction of sounds at high frequencies and phase (or time) at low frequencirs.
3. We can eliminate a reflection (at least minimize it) by using the surface as a baffle by mounting the driver in the surface.
4. We don't have to be concerned about on-axis so long as we use the drivers in their piston ranges (where dispersion is pretty uniform at all forward angles).
5. Tweeters are easier to aim than larger drivers.
6. Acoustic crosstalk kills stereo (don't focus on this one, but consider it).

Ok, back to work for me. I'll be back later.

OK, Once Again, my flickr account doesn't work and I don't have time to figure out why. Sorry. I'll have to do this long hand:

1. We've been through this before, but here goes again. At frequencies with wavelengths that are long compared to the diameter of the cone, sound is radiated in ALL directions--front, back, and sides. As frequency rises, radiation towards the rear diminishes and at very high frequencies, sound is radiated into a narrow space directly in front of the speaker.

2. If you think about that in terms of measuring the frequency response of the speaker at various angles, you'll discover that the frequency response is pretty wide in front and low frequency only behind. This happens for ALL speakers. 100Hz is BASS for a 4" and sound is radiated front, back, sides, etc. 500Hz is bass for 1" tweeter.

3. we put speakers in baffles and boxes to isolate the front wave from the back wave so we can hear more low frequency. The baffle or box prevents cancellation, right? If the sound only radiated towards the front, we wouldn't have to worry about cancellation, right? The baffle also helps to increase the low frequencies by reflecting the sound that radiates toward the rear back into the front-going wave. A horn does this same thing, but it just keeps folding the off-axis response back into the on axis response. The angle of the walls and the shape of the mouth determine the radiation pattern. A baffle is a simple dispersion controlling device.

4. When reflected sound meets direct sound, the reflected sound is delayed compared to the original sound that created the reflection. The direct sound and the reflected sound will be out of phase at some frequency and multiples of that frequency. That's comb filtering, and it's no big deal, but the lowest out-of-phase condition is a kind of big deal because the width of the suckout is pretty big.

5. We use level at high frequencies to determine the location of sound in the lateral plane (side to side) and phase (or time) as frequencies go lower. At really low frequencies, we don't use level very effectively. At the top of the midrange both are important. It's not a strict cut-off. In fact, from 1kHz to 3kHz, we don't use either very well.

6. When there are two sources for a sound that are identical in frequency and time, we hear a phantom source in between. That's why we hear a center image in a stereo system. If we have a speaker and a reflection that have the same frequency response, we'll hear a phantom image in between. If the frequency response of the reflection is NOT the same, then the image will be placed differently for sounds at different frequencies. If 1kHz is louder in the reflection, 1kHz will image closer to the reflecting surface. At the frequency where the speaker and the reflection are out of phase, we'll hear two images (or no image, depending on your perspective). This causes images to wander around.

7. When you EQ or delay a channel, you EQ or delay the reflection in the same way. You can't do one without the other--that's the law. You also can't cover the glass if you want to drive the car.

8. At home, we can use this reflection easily to create an image that's wider than the speaker and a speaker with constant directivity (similar on and off axis response) does this better than a speaker with a jagged off axis response. the reflection is more similar to the direct sound because the walls are flat, the room is pretty symmetrical, etc.

9. In a car, the walls aren't flat and the speakers are mounted really close to the reflecting surfaces. Because of this, we can't *easily* use the side windows to create phantom images. You'll hear it once in a while, depending on the song, and your EQ. Mostly what happens in a car is simple image spread and comb filtering due to reflections.

10. If we put tweeters in the a-pillars, low frequencies bounce off of everything. As frequency response rises, the reflections will gradually be confined to surfaces forward of the tweeter--including the door glass. low frequencies will also bounce off the door glass AND the windshield. If we put mids and tweeters in the a-pillars, the same thing happens at lower and lower frequencies. This means that the reflections from the dash, windshield, and door glass all have different frequency response and can't be equalized to be the same. Sometimes the image will wander outside the location of the speakers. Then, we play that track repeatedly for everyone and claim to have great stage width. Play another track and the width collapses to well inside the pillars. We don't play that track for demos, right? This depends on the frequency response of our reflections and how we have time alignment set. So...

11. When we put speakers in the a-pillars, we hang them in front of a bunch of reflecting surfaces which will all turn into additional radiators with varying frequency responses.

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12. If we make ONE of those surfaces the baffle, then we eliminate it as a troublesome reflecting surface (depending on your perspective and whether you want to demo the same track all the time) because the reflection from the baffle happens at almost exactly the same time as the direct sound.

13. If the speakers are in the doors, we don't have the high-frequency reflection from the door glass to contend with because it's essentially the baffle and the reflection reaches our ears at almost the same time as the direct sound. We still have to contend with the reflection from the windshield, but it's farther away--and remember, sound is attenuated by 6dB for every doubling of distance. For the sum of two sounds, the louder one dominates, right? If the reflection is attenuated, its frequency response has less influence on the sum.

14. If we use the speakers in the range where they have wide dispersion, we don't have to aim them because sound is radiated into all angles. Makes it easy to mount them in the doors. We can aim the tweeter easily because it's small to preserve high frequencies in the direct sound. Low frequencies will bounce off the glass nearby, but the door glass is close and we don't hear phase easily at high frequencies.

15. If we put the speakers in the doors, we have to use time alignment and EQ to get a phantom center and it'll only work in one seat. If we need two seats, then equal path lengths are the way to go--or a center channel with the right processing.

So, the short story is that by putting speakers in the doors, we simplify the job of installing them, eliminate the most troublesome reflection from the door glass and minimize the influence of the reflection from the windshield.

Putting a center channel in the top of the dash is a little different. We hope for the best in terms of the big suckout from the combination of the direct and reflected sound from the windshield and we use the windshield to provide a phantom image that's a little higher than the location of the speaker in the dash. This works great, but it does provide some image spread for the center because the sound of the center speaker will reflect off the WHOLE windshield and the door glass.

---

Quote:

Originally Posted by **eficalibrator**

[View Post](#)

*Perhaps I missed it in the eleventy billion posts here, but I'm not seeing a concise method of setting outboard amplifier gains. The manual doesn't seem to cover it either, implying that all of the gain matching is done digitally in the MS-8.*

*Would it be best to set amplifier gains in the usual manner (measure  $V_{rms}$  with a test tone) with the MS-8 out of the loop prior to doing the system calibration? I know that the mids will certainly be a little more power hungry than the tweeter in general, so it only makes sense that those amplifier channels would have the gain a little higher, right? I'd also want to make sure that I'm really getting full use of my subwoofer channel's power.*

Sorry. Set all amplifier input sensitivity controls at about 2V and be sure to start the sweeps with MS-8's volume control at about -30 to -35. That's not in the manual...oops.

---

Quote:

Originally Posted by **acidbass303**

[View Post](#)

*Beautiful explanation Mr Andy...*

*Speakers going into doors definitely...*

*One thing though, do we have to flush mount the tweeters to get the baffle effect (making them 90 degrees of axis) or can the provided 30 degree pods be used for surface mounting on door? (which I prefer for my tweeters)*

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Aim the tweeters so that both listeners are in a +/- 35-degree window and your're golden. Obviously, the door isn't a perfectly flat baffle, but that's OK.

Quote:

Originally Posted by **hallsc**

[View Post](#)

Hey Andy,

*I can't remember if this has been asked and addressed yet, but in reference to you saying to put the center channel in the dash facing up into the windshield, would facing directly forward work?*

*I have attached a picture of my dash. I am using an aftermarket head unit, and the display up top is now dead due to no stock stereo. If I pulled the display unit out and got fancy with fibreglassing the hole that was left, I could fit either a 4-inch full-range speaker or a 4-inch mid/tweeter combo facing forward. This would prevent me having to tear up the dash. Would the speaker facing forward like this work? I would assume so, since most HT center channels simply face forward, or am I missing something. If this is a dumb question I apologize, but after hearing so many times about the center channel facing the windshield I just wanted to make sure that I am the (lucky?) exception to being forced to do this. Thanks, Andy*

Quote:

Originally Posted by **t3sn4f2**

[View Post](#)

Andy, would you use the MS-8 with [this](#) center channel. Mounted slightly off axis inside the center display hole on the dash in the following car (in a compatible custom enclosure).

*If so, would it be ok to run it with the passive crossover it comes with or go fully active running the 2 3" woofers in parallel up to 500Hz or so and then 4" mid and coax tweeter off their own amp channel crossed around 3KHz (or whatever works best).*

*The total system would be the above 3 channel center plus L/R 2 way (woofers in the lower door and tweeters in the sills). Along with the rear sub for the remaining channel.*

Quote:

Originally Posted by **Andy Wehmeyer**

[View Post](#)

*Sure. that would work. If it were my car, I'd move the display to the front of that hole and mount the center in the top firing into the windsheild. In either case, I think that's an unnecessary number of drivers. Go with the largest single midrange you can find and add a tweeter (half of a 5" component system would be great). If that's not an option, use a 4" or a pair of mids and a tweeter. If you have a bunch of extra amp channels and an external crossover, biamping is OK. If you don't, I suggest a passive for the center.*

*I find that the best use of MS-8's 8 channels in a car is:*

*Biamped front (4)  
Center (1)  
Sub (1)  
Sides and/or Rears (2)*

*If you do sides and rears, run them in parallel.*



*If you use a 2-way speaker system in front, use separate channels for mids and tweeters. If you do a 3-way, use separate channels for the midbass and a pair of channels for mids and tweeters, together with their own crossovers (passive or active). If you do that, cross the midbass as high as you can stand--1k works well so long as they are 6" or smaller. Our ears aren't good at determining the location of sounds from 1k to 3k, and above 3k, level is the most important criterion. This arrangement provides accurate delay measurements and settings for the midbass and will fix the mids and tweeters using EQ.*

*Since you'll be using a center speaker, the steering and that speaker will reduce the importance of time alignment for frequencies above the center-channel's cutoff and TA will fix it for lower frequencies using the midbass in the doors.*

Quote:

Originally Posted by JJAZ

[View Post](#)

*I do not understand the above.*

*Setting the amplifier input sensitivity to 2V tells you absolutely nothing about the output level of the speaker.*

*Consider this:*

*12m midrange of a PG Xenon 200.4 (200W RMS)*

*Peerless 8" SLS Midwoofer of a PG Xenon 200.4 (200W RMS)*

*4x12" Peerless XLS wired as a 1 Ohm load of a Celestra DA2K (2100W RMS)*

*If the input gains on all amps are set at 2V, the resulting output will be VERY different.*

*The 12m midrange is roughly 4dB more sensitive than the 8" SLS, and the amplifier gain is the same.*

*The 4x12" subwoofers are a lot more sensitive than the 12m when you have 4 wired in parallel. Add to that the higher voltage gain from the amp (roughly 5dB more voltage gain).*

*I do not see how it will work just setting the input sensitivity for all amps at 2V.*

*Rather I would think a level matching of some sort is what is needed. F.x. Set the midrange channels at 2V and match the midwoofer and subwoofers output level to that of the midrange.*

*Andy, let me know your thoughts on this, something isn't adding up by just setting all gains at 2V. Imagine if I used horns for my midrange, then the differences would be even worse because of the higher sensitivity of the horns.*

Level matching is certainly better, but MS-8 will do most of that, so long as things are pretty close. I suggest 2V because that pretty closely matches the output of the MS-8 and will at least get you in the ballpark. Since you have 4 12" woofers and 2100 watts on the bass, I'd suggest turning the bass down even more and then turning it back up after calibration.

Ultimately, the whole exercise is an effort to level match AND equalize. If you're going to level match, use octave spacing on whatever RTS you're going to use, so you don't match to a huge peak or a giant dip.

If you're going to level match, then set the mid channels at 2V and adjust the other amps so the output is similar.

I'm just trying to make it easy.

Quote:

Originally Posted by **mxl16**

[View Post](#)

*I agree with this. I was never able to get my MS-8 and my amp gains to "play nicely".*

So here's the deal--The target curve includes 9dB more bass than midrange, and the high frequencies roll off a bit--20k is -6dB when compared to 1k.

If you're building a system and you're using regular car audio speakers and a sub, then all of this sensitivity matching isn't all that necessary, considering the amplifier power that you're likely to use. That's why I say set the input sensitivity to 2V.

If you're building a system with drivers of wildly varying sensitivity and are using monster amounts of power on part of your system and not on the others, then you'll have to do a little work to get within the 40-or-so-dB window that MS-8 uses for EQ. MS-8 tries to level match using several analysis bands before it applies EQ. It checks the bass between 50 and 80Hz. If you cross your sub over at 40Hz and it's a 15" in a .5 cubic foot box, you're going to have problems. MS-8 sweeps a wider band of frequencies than what you choose as a crossover--it has to.

In the example above, the woofer will have MUCH greater output above 40Hz than below. When MS-8 sweeps, it will set the bass level according to the 50-80Hz output, then it will try to EQ the bass back in. Is this bad algorithm design? I don't think so. Crossing a sub over at 40 Hz is ridiculous, unless you've designed the box above. In that case, the problem isn't that MS-8 is bad, the problem is that the subwoofer design seriously unconventional--you'd be using the sub only in the "stop-band". For a sub designed this way, the only valid reason to do it is because you have no space for woofers and have plenty of money to throw away on a seriously inefficient design. A 10" the same box would probably be a better choice.

If you use horns and compression drivers because you're into pattern control, then you'll have to deal with the fact that they're probably 20dB more efficient than the 84dB@1W,1M midbass that are likely to go along with them--and the fact that frequencies above 10k are likely to be almost missing. If you apply 100W to the horns and 100W to the midbass, then you're going to chew up EQ and gain matching just to get the horns and midbass to similar levels.

So...the moral of the story here is...

MS-8 was designed to make it very easy to get a great sounding system if you build a system in a pretty conventional way. We've included lots of "edge cases", too. There are 48 possible speaker systems supported and in order for it to do its thing, the output of the speakers needs to be within about 30dB. If you use readily available car audio gear and don't include a monster sub system, then the 2V suggestion works great, so long as the sweeps are at the right level. The window is big--turn the volume down. If you've built a system that includes drivers and amps that make the acoustic output of the various bands well outside this window, then you'll need to make some adjustments.

If you're using a conventional signal processor, then you'll be able to more easily get things in order with an unconventional system before doing any equalizing. MS-8 doesn't pass signal until you run setup, so it's helpful to ballpark the settings the first time, but before insisting that my suggestion can't work, you might using it as a baseline.

This saturation problem isn't unique to MS-8, it's just better hidden with regular RTAs. When you saturate the input (mic or preamp) of a regular RTA, the data you view gets compressed and the curve looks nicer when you make frequency response measurements. This is a convenient little lie and one that few novice tuners are likely to question. However, in my experience this is a contributing factor in the "flat response don't sound no good" view.

If you try to set time alignment by making impulse response measurements and you saturate the input, you won't be able to accurately pick the peak--and MS-8 can't either. The difference is that with the manual method, you'll be able to enter the wrong number or make a measurement with a ruler and enter that number and move on. In this case, MS-8 just doesn't

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set the value or doesn't EQ. Is that worse? Hmmm...depends on your view. I wish MS-8 would flash a big red light and say, through the speakers, "Dude...unconventional system detected. Please turn down the bass" (or something to that effect), but it doesn't. That's why I sit here in front of my computer typing into this forum all the time. 😊

Gary and I used to have to show up two days before an IASCA contest with a suitcase full of gear to tune Team JBL cars so our guys' cars would sound good. Now, Gary and I show up the day before the show eat a nice dinner, make a few adjustments with MS-8's remote and the results are usually better.

All of this boils down to one very simple statement--MS-8 uses a different method of tuning a car and has its own constraints. Once you accept them and learn to work within them, the process is simpler and will probably yield better EQ results, unless you're a master tweaker and have serious analysis tools and processing capability and the time to spend making a thousand adjustments.

---

You can set the amplifier sensitivity to about 2V by looking at the scale on the potentiometer. If it reads Min/Max, then look in the manual to see what the range of input sensitivity is, then ballpark it. Just get close. No need for a scope and all of that nonsense.

---

#### **Acidbass opsts:**

*i too was having this problem in the past. here is what i did that worked, and works all the time..*

*i gather that you have your sub gain all the way down (if not then do so), turn the gain on your midbass a little higher, try the acoustic calibration at -40 at first, if its good then leave it be, if not, try -50 db volume. Basically i think that the MS8 is more sensitive and less forgiving to the louder sub sweeps than the midbass and tweets. i remember Mr Andy saying somewhere that if the sub sweep feels too quiet then it is probably at the right level, and thats exactly true, at the right level, the sub sweep does feel lot quieter than other speakers' sweeps. as a matter of fact, as Mr Andy said, you should not be able to "feel" the sub at all, just "hear" its sweep. so just keep lowering the calibration volume after -40 in -5 or -10 decrements untill you get it right. You might have to increase your midbass gain a little after -40db volume so that their sweeps dont get too quiet. Trust me, it takes a little thinking and some work to be done, but once you are there, it sounds beautiful... have best SQ ever in my car to date now.  
may be the method i use is not the way it is meant to be done,, but it sure does work for me.*

#### **Andy W. Replies:**

Acidbass,

Thanks for the solution. This has been my experience too.

---

Matty,

Before you go too far down this road, here are a few tips.

When you use the rears for L7, the only signals that are steered to those speakers are ambient sounds. No bass will appear in the rear. If you have no room for a sub in the back (too bad I threw away the tiny fiberglass box I built for my old mini--I could have shipped it to you) then use the 6x9"s as subs. I think those speakers come with a passive crossover--put it in the closet.

Then, connect the tweeter (use a 20uF cap as protection--this is just good system design) as "rear" and set the crossover to something like 1kHz 24dB/octave. That'll give you subs and enough rear to provide some ambience.

Or, mount a 3" coaxial in the C-Pillar for rear. That's what I did in my old Mini and it worked great.

Quote:

Originally Posted by **yuri**

[View Post](#)

*matt,*

*in theory if you run 3way you should be able to play the 6.5 lower and harder than a 2 way setup .*

I'd say this is a secondary benefit, if it's a benefit. The real benefit in a 3-way 6" setup is that you can use the 6" in the range where the dispersion is wide. Better sound in door-mounted setups. You need something bigger than a 6" for bass.

Quote:

Originally Posted by **Andy Wehmeyer**

[View Post](#)

*When MS-8 sweeps, it will set the bass level according to the 50-80Hz output, then it will try to EQ the bass back in. Is this bad algorithm design? I don't think so. Crossing a sub over at 40 Hz is ridiculous, unless you've designed the box above.*

*Andy, just to verify: What if the midbass drivers are capable of playing down to 45Hz, and I wish to utilize the midbasses to their full potential, are you saying that it would still be better to cross the sub higher and how high would you recommend?*

Quote:

Originally Posted by **Andy Wehmeyer**

[View Post](#)

*If you apply 100W to the horns and 100W to the midbass, then you're going to chew up EQ and gain matching just to get the horns and midbass to similar levels.*

*So if larger level differences between drivers "chew up EQ and gain matching", and I want the MS-8 to have plenty of "headroom" in both EQ and gain to do the best possible job with my system, then why would it not be of utmost importance to level match the amp channels manually BEFORE the MS-8 auto-tune? I mean the LAST thing I would want is for the processor to run out of steam, so to speak, and not be able to make the necessary corrections, just because the drivers are not properly level-matched.*

*Also, I may be totally off base here, but if you have a large level difference, say 40 dB, and the MS-8 has to lower the gain by the same amount, does that not reduce the overall output of the MS-8 and the S/N ratio?*

**Andy W. replies:**

In this case conventional "wisdom" is definitely wrong.

Crossing midbass drivers over at 45Hz isn't necessary. You don't have to do that to get bass in the front and no driver (except for a subwoofer because there's no other way to do it) should play at their resonance frequency. Speakers make the most distortion there. Your subwoofer is much better at making 45Hz than your midbass driver is, no matter what.

Quote:

Originally Posted by **Gary Mac**

[View Post](#)

*Im just looking for a confirmation on this.*

*Im currently running two way front (ch 1-4), sides (ch 5/6), Sub (ch 7/8) and center off MS8 internal amp.*

*I want to now amp my center after MS8, so I am planning to do the following:*

*Two way front (ch 1-4)*

*Sides (Ch 5/6)*

Center (mono ch 7)  
sub (mono ch 8)

*Could someone that has done this please confirm this is correct?*

Correct!

---

Quote:

Originally Posted by **BuickGN**

[View Post](#)

*That's what I was thinking. Sub has to be #7 or #8 from what I remember.*

Not on the outputs. Only on the inputs. When MS-8 does it's UN-EQ, it has to see a high frequency channel before the sub channel. Putting Subs on 7 and/or 8 ensures this. On the output, it doesn't matter. Any channel can be anything.

---

Quote:

Originally Posted by **JJAZ**

[View Post](#)

*True.. It would have been if the calibration data was not dependent on the x-over settings, to enable toying with x-overs without having to recalibrate.*

Except that moving the crossover points makes the correction filter invalid. Crossovers should be set for driver safety and for dispersion characteristics. Equalizers are for frequency response shaping.

---

NO! Don't use the head unit output for the sub. Use the mids and tweeters on two channels with the passive crossover. Use 2 channels for the midbass, 2 channels for the rear and you'll have 2 channels left over for the sub.

Or, if the Alpine amps have a x10 switch on the crossover, you could use the crossover in the amp to divide between the mids and tweeters. Then you won't need the passive.

---

Quote:

Originally Posted by **manstretch**

[View Post](#)

*Does anyone have any experience using an MS-8 in a car with Ford Sync? Is there a bluetooth echo issue with calling?*

haven't received any reports of difficulties with Sync, but the Sony system in the Ford Flex is a bit of a PITA. Which Ford are you working on?

Andy,

*Nothing yet, but I'm considering purchasing a 2012 Focus and was wondering if there were any issues I should consider such as bluetooth echo, impedance problems, etc...*

**I don't think so. Maybe another member here has a synch system and can comment.**

---

Putting a cap on the tweeters in any system that uses active crossovers is good practice--it'll prevent pops from making it to the tweeters--which can damage them. Also, if the amp should fail, it'll prevent DC from killing the tweeters. Usually, you want to choose a frequency at least an octave below your intended crossover point or lower. 6kHz is too high, but that's not

why the system sounds bad.

The woofers need more power and the center would be better if it could play flat down to 200Hz or so. A dome midrange may play that low, but it probably won't be flat. This is why it doesn't sound good--much of the center channel information is lost and isn't routed to left and right because that frequency is determined by the crossover value you enter for the center high pass. If you enter 200Hz and your center speaker won't play that, they it's lost. That's a big deal.

---

Front 2-way. Subsonic filter at 20-30Hz. Crossover between front low and front high at 200. You have to enter sides before entering rear. If you have only one set (side or rear) enter them as sides (just as it says in the manual). Center 200 Hz. All 4th order. Rear 100Hz and up, 4th order.

Why is this so hard?

---

Please read the manual and my post above.

And then reread this one:

Set up the front as 2-way. Front Low will be the under seat woofers. Front high will be the mids and tweeters.

Set up the sides as 1-way. That is for your rear speakers. If you only have one set of speakers behind you, MS-8 recognizes them as sides, no matter what you'd like to call them.

Center is center.

There is no sub.

Then, front low subsonic filter should be 20-30Hz, 12dB/octave.

Front crossover, which is the point between the 8" under the seats and the 4" should be 200Hz (this is the same as your 160, but the difference probably doesn't matter much). Use 24dB/octave.

Set the center crossover to the same frequency as the front crossover: 200Hz if you believe me, 160 if you don't.

Set the side high pass to something higher than 100Hz. Use 24dB/octave.

So long as you have enough power for the woofers under the seats, this should sound great. If you're using the factory woofers, it'll be fine. If you replace them with some plastic cone thing with a giant voice coil and a big magnet, then you'll need more power. Aftermarket subs are designed to handle a lot of power and that requires a big coil, which weighs a lot, which REQUIRES more power.

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*My mids and tweets are equidistant to the listening positions. That's why I have never thought about covering the tweets. I guess I can try and see what happens (if I ever get my car back from the shop 🙄).*

*Andy?*



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Then there's no need to cover them. It's sometimes helpful when the mid is in the bottom of the door and the tweeter is in the sail panel.

---

*Is the "image on the hood" result a secret or do you mind sharing how to do this??? I have the same car as the one you described and my image is at the windshield. Inquiring minds want to know!*

Use the 31-band EQ. Try some cut between 500Hz and 2kHz and adjust the level of the center channel. Also, try more or less rear (side) output. This will vary by recording. Really dry studio recordings that have little ambience won't do it (like old Lyle Lovett), but recordings with more ambience or a good live recording will (Corinne Bailey Rae--Live in New York).

---

Quote:

Originally Posted by **B33M3R**

[View Post](#)

*Also I'm not sure I've got the gains set right, they are at about 1/4 for the front doors and just over half for the underseats at present.*

*Any advice would be appreciated!*

*Thanks*

*Try set you amplifier gain about 1/3 **after** the halfway point for both your midbass and front speakers channels. Make sure the amplifier x-over for all channels are set to flat. Same goes with the head unit, make sure you turn off any processing (e.g, x-over, loud etc)*

*Use Andy's x-over points and speaker setup.*

*Volume calibration level, try -50.*

*During speaker output diagnostic, if your underseat woofer is dominant against the other speakers, set your amplifier gain for the woofer back to halfway point, or until it matches with the rest of the speakers. leave the front speakers gain as is.*

*If that didn't work, try making your underseat woofer sounds less volume than the rest, but not too low.*

*If you haven't already understand how MS8 works, it will boost up volume on EQ range it deems necessary to boost, and likewise it will cut on EQ range it deems necessary to cut based on the information it gathers during acoustical measurement - it does this to hit the target eq curve. If your woofer sounds less volume than the rest, the MS8 will pick it up and boost the volume on the EQ range your underseat woofer is set to play at.*

*In my experience, is better for subwoofer to sound less volume than the rest of the speakers during output diagnostic (should not be felt and just audible). That way, I have no issues with subbass/midbass. Perhaps it can also be worked out that way for underseat 8" woofer.*

*Good luck!*

*^^ this is good advice. Also, be sure that the crossover on the amp is set to "flat".*

---

Quote:

Originally Posted by **ramsa1**

[View Post](#)

*Guys, my MS8 sounds fantastic. My only gripe is that on some albums recorded at lower levels, I lack output even with my HU at max volume. If I set the MS8 system volume from -6db to 0db It gets loud enough for me with no audible distortion.*

*I know the proper fix for this is to raise amp gain a little but I dont want to rip out my seats again to adjust that. Is there anything wrong with running MS8 volume at 0db on some songs? My sub level and tone controls are centered on the ms8 btw.*

No, there's no problem. If the crest factor is high, then the average level is lower and that's why it doesn't sound as loud. You may clip transients, but that's VERY difficult to hear.

---

Quote:

Originally Posted by **Sirrus**

[View Post](#)

*So I'm still curious about my original question, but I've made a minor breakthrough with my setup and I wanted to share it with you all. With the following post in mind, I went back out to the car with an SPL meter, EMC8000 and laptop:*

*Sure enough, I've been running my calibration a -40 db which results in an SPL of about 50 db. It makes sense because my fronts are actually quieter than my rears, which are running off the MS-8. When I brought the volume up to -20 db (which the manual recommends for running off MS-8 power), my sweeps were in the 70-75 db range with bass at about 85 db. After calibration, it was a night and day difference! It's funny how you get used to something and don't realize it's not right, except for that funny feeling in the back of your head.*

*Feature Request for a future firmware upgrade: Some kind of indicator to tell you how "happy" the MS-8 is with the volume levels during calibration. I bet it could even help with gain setup. Maybe add a gain adjustment step right after crossover configuration with on-screen measurements?*

Cool. Thanks. I keep thinking I'll have a few minutes in the lab to do this, but every day is some new crisis which leaves me no time for any additional testing.

If I could get one feature request added, this would be the one. It's not a simple addition, though.

---

Think carefully about this whole time aligning of subwoofers. It isn't necessary.

If you set time alignment manually with another processor, you measure from the speakers to the listening position. The sub is farthest away--let's say it's 5 feet away. Then, measure from the next one--probably the passenger mid in the bottom of the door, which is probably 4 feet away. The difference in the distance is 1 foot. So, you delay everything but the sub by one foot.

Now, let's say that your crossover between your sub and your front speakers is 60Hz. A 60Hz wavelength is approximately 20 feet long. One wavelength is also 360 degrees. 1/20 of 360 is 18. The phase shift at the crossover frequency (which is all that matters) is 18 degrees. That doesn't contribute any cancellation nor does it affect the placement of bass sounds or the illusion of bass up front.

Getting bass up front is simply about making sure that polarity of the sub is correct and the right EQ. You can simply swap the speaker wires and recalibrate with the microphone to determine which of these you prefer.

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*Some people have reported a lack of midbass when using a trunk sub. This has been an issue especially in BMWs with the midbass drivers under the seats. If you calibrate without a sub, and let the woofers play all the way down, the midbass is great, but as soon as you add the sub into the mix, the midbass just disappears. It can be helped with the EQ, but not to the level of impact of the "no sub" calibration, not even close.*

*After having read about the lack of sub T/A recently, and Andy's explanation that it really is not that important, I had an idea. What if I calibrated without the sub, and then added it back in post calibration, using the crossovers in my amp? So I went out this morning for this little experiment. I set the subsonic at 20Hz on the underseat 8" woofers and calibrated without a sub. I then split the signal at the 4-ch amp and high-passed the underseats at 50Hz 24dB/oct and low-passed the sub at 50Hz, 12db/Oct.*

*The result? - Fantastic midbass and stellar subbass, the best of both worlds! 😊*

This is an interesting work-around and is completely credible. In cars, very little EQ is required below 50Hz and this eliminates the level matching algorithm between midbass and subs, which seems to sometimes cause difficulty. I've found that with big midbass drivers and with amplifiers that also include crossovers that level matching sometimes requires several attempts at calibration with different gain adjustments for the sub.

MS-8 uses 50-80 Hz to check the level of the sub to match it according to the target with the front speakers. If there's a huge peak there in the sub and the midbass, and the crossover is set lower than that, the result can be a lack of midbass and bass too.

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*Hi Andy, THANK YOU for all the great info on the MS-8 threads. I was the one who found and posted the links to the JBL Bluetooth echo workaround with remapping the mute button to be a DEFEAT function of delay and processing. <http://ms8-eu.jbl.com/installation.html>*

*Question: I am a computer tech and am unable to get Win 7 to be able to use/start the driver for USBXpress - MS8 even after multiple PCs and updated drivers from SciLabs.*

*What am I missing here? Win7 reports that the driver cannot be started as soon as the MS-8 is plugged in. I would REALLY like to take advantage of the remap of the mute button. I am about ready to go install Win95 or XP on a laptop just to see if that's the issue!!!! Please no! Anyway just after your thoughts on getting the MS-8 to talk properly to Windows 7 Thx, Jon*

Guys, before you update the software to try to fix the BT problem, go into the audio controls menu and turn off L7 and "processing". If that fixes the BT problem, then update the firmware. If it does NOT fix the problem, then DO NOT update the software. The update turns the mute button into a processing off button, and that's all it does.

I don't have a neatly packaged version of the original code to send you to un-update yet.

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Quote:

Originally Posted by **lavesa**

[View Post](#)

*Did you still configure a 2-Way front with the underseat subs as the low? How did you add the sub back after calibration? Can you explain exactly what you did because I have the same exact problem with my 7 series.*

*I have a 4 channel amp that is pushing the underseat subs (1+2) and one 12W3V3 (3&4).*

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

1. Run set-up with 2-way front and no sub. Set the subsonic at 20Hz. Lo/Hi at 150Hz, 24dB/oct (just do it...). Crossovers on amp off.

2. Run calibration

3. Set the amp such that the input from ch 1&2 goes to all 4 channels

4. Enable high-pass filter on amp for underseat woofers. Start with 60Hz, 24dB/oct.

5. Enable low-pass filter on amp for subwoofer. Start with 60Hz, 12dB/oct

Edit:

6. Set amp gains to your liking.

Yes, this^^^, for now while we finish working on this level matching issue, which seems to be at it's worst in BMWs with under-seat woofers. I listened to 30 MS-8s over the last two weeks in Asia in every car imaginable (except for a BMW and a Winnebago) and nearly every one sounded good.

For those of you who have an extra channel, you can also map your subwoofer to the front low (in a 2-or 3-way front sytem) and that will treat the subs as fronts and bypass the level matching.

---

8V will definitely clip the input. Put the setup CD in the head unit and begin input calibration. Turn the volume up until you get signal "high". When "high" appears, then you'll know how high you can turn the volume with a 0dB (maximum) signal. Then quit the setup. There's no need to un-EQ the head.

Quote:

Originally Posted by **BuickGN**

[View Post](#)

100hz to 900hz is the midbass. Midranges play 900 to 5,000. The little 6.5 in the doors sound fine up that high. Maybe it's better that I got the smaller midbasses. I guess what I don't get is what am I gaining by crossing the midbasses down lower? If they sound good up to 900hz, why not use the larger driver to play those frequencies. I know the theory of having all frequencies come from one driver if possible, but honestly, with the stage out in front of the windshield, I can't tell where anything is coming from and vocals sound great. I went with the theory of using the largest driver for a given frequency within reason and so far it's made a huge improvement. It seems like by following the common advice around here, I initially ruined my sound and for no real reason that I can think of.

Perfect. This is correct. There are two big criteria for crossover points. First, you should high pass speakers in their passband. That's above their resonance. This helps to minimize distortion. You should low pass speakers in their piston range (where the dispersion is wide).

That's what GN has done here and guess what...it works!

Quote:

Originally Posted by **NWS Alpine**

[View Post](#)

I am trying to decide where to place my rear fill. I upgraded my center channel to a Hybrid Audio Technology L3 based on your suggestions on centers. I am using the imagine 6.5 components actively. I have another set of the L3 speakers. Should

*I place them on the rear doors in an SUV or in the D pillars as there is currently two 3.5" speakers on the D pillars near the roof. Not sure what would work better with the MS-8. I am thinking the d pillars right now but no idea.*

I'd do D-Pillars

Quote:

Originally Posted by **thomv**

[View Post](#)

*It's quite possible I'm mixed up.* 🇺🇸

*The only time I notice the MS8 ask for volume is when running calibration. If I set it to -30 (or so) everything sounds really good, just not loud at all. I even tried different volume settings on the radio when using the disc to set up. There's no volume display on the OEM radio, so volume all the way up -3 clicks, -8 clicks. Didn't seem to make a difference. Is there a way to adjust the MS8 gain after setup? I thought I looked everywhere but if it's there I must have overlooked it...*

When you run acoustic calibration, MS-8 generates the signals. Set MS-8's volume control DURING calibration at -20- -40. Then, AFTER calibration is done, either set the radio's volume control to about 3/4 and use MS-8's control or set MS-8's control at -6 and use the radio's volume control.

And read the manual and pay careful attention where it says to do calibration with the MS-8's volume control turned DOWN! set the amp gains to the 2V setting and try calibration with MS-8's volume control at -35. Turn all the crossovers off in the amplifiers.

I'll bet it will sound fine then.

[QUOTE=Frank Drebin;1445772]You have to run the startup CD every time you change crossovers etc. It seems the ms8 forgets the inputs and I got a really strong drivers side signal when I skipped the input test. I got the front components sounding great when i used the CD, and I could only hear the drivers side tweet when i didnt.

Yes, if you change crossovers, you have to run Input/Output Setup. MS-8 builds the system and throws away the information as you complete the steps in order to make everything fit in the memory. It saves a series of correction filters per channel and the filters are BIG.

I suggest choosing crossovers to keep the speakers happy and working within the ranges where their dispersion is wide (when possible), and then tuning the car with the acoustic calibration and the 31-band EQ. Unless you have a really unconventional system, adjusting the crossovers over and over to tune the car (the way we all used to do when all the tools are available all the time) really isn't the right way to do it. Crossovers are not equalizers!

Quote:

Originally Posted by **Frank Drebin**

[View Post](#)

*The one thing that confuses me about such a nice piece of technology, is that I'm able to ground the unit through the mounting screws. I thought it was another bad unit, but it works fine. My screws are going through my amp rack and hit the back (metal) wall...If I slam the back door I get a loud pop, which I'm almost positive is because of the screws messing with the ground location.*

*I also get the turn off pop. I'll back off the screws and see if it fixes the problem. I'm thinking it will, but I thought that you*

*shouldn't be able to ground a piece of electronic equipment off it's metal body? Shouldn't the internal board be insulated from the body?*

Well, it would be nice if the case of the unit didn't have to be connected to chassis ground, but it does--and does with many pieces of equipment, especially those that require a shield. There was once a time that audio ground and power supply ground were the same all the way through the units--about 20 years ago, and that always created noise. Now, the case is chassis (power supply) ground and the audio INPUTS are differential. the output RCA must, unfortunately, be referenced to the same ground for RCA connections, but not for speaker level connections. Ideally, the unit would be grounded in only one place, but since the case and power supply negative are the same, grounding the case too shouldn't cause a ground loop. Try shorter screws.

I doubt the pop when you slam the back door has much to do with the ground. How is the system connected? Is this a factory head unit?

---

Quote:

Originally Posted by **an2ny888** [View Post](#)  
*Andy, will the ms8 operate properly if my sub has a non defeatable x0ver? im using a powered alpine sub right now, am i right thinking the sub sweeps will be adversely affected by the x-over?*

Set the crossover to the highest frequency available on the sub's controls.

---

Just lodd in the manual or on the labels for the potentiometers. If the manual says the adjustment range is 100mV to 4V, then set the controls somewhere near the middle. It isn't critical.

---

Quote:

Originally Posted by **subwoofery** [View Post](#)  
*If you don't know how to set the amp for 2V, don't worry about it too much (for now 😊)*  
  
*Calibrate it @ -40 volume and listen to the sound coming from each speaker.  
If one noise is louder than another, try to up the gain (@ the amp) on the quieter one  
Also remember that the subwoofer should be heard and not felt...*

*Then listen to your system with familiar music*

*Not satisfied? Try a different volume for the calibration.  
Not satisfied? Try to play with your gains (@ the amp) and recalibrate.*

**Some people forget that the MS-8 is still a processor** that needs attention in order to take full advantage of it's potential... I know marketing states plug and play but you really need to play with it and try different things so that it can only reward you with good sound.

*Kelvin*

Yes, this is right. The sweep levels don't have to be precisely at a certain level for the thing to work. If you can hear the sweeps easily they're loud enough. If after calibration you have no center image and it seems as though the EQ is seriously wrong--like lots of highs and no midbass, then they're too loud. There's no "fine adjustment" required. No need to try -27, then -28, then -29. Try -30. If it doesn't work, then try -40, for example.



Quote:

Originally Posted by **Mark the Bold**

[View Post](#)

*Just installed this in my truck and replaced my long time friend the DQXS.*

*Without sounding too gushing in my praise, this is probably the single biggest improvement to my car's system ever. My music is now coming from the center of the dash, and everything sounds just incredible. I've been tinkering with the DQXS for a year now, and the 5 minute autotune blows my best efforts away easily.*

*Despite all the "everyone's got their own opinion on what sounds good", I am now a firm believer in the fact that there IS a true scientific flat response curve to a systems output. AND it sounds incredible.*

*My only gripe (REALLY minor one) with it is the default -20dB volume offset during calibration. Maybe Kenwood puts out a weak-ass signal but with even -10dB I max out my HU volume's before it gets close to being even loud. Easy enough fix; just run the recalibration again at -0db. Maybe Andy, on the next firmware you can allow us to adjust the volume offset from the main menu without having to recalibrate from scratch. REALLY splitting hairs here I know.*

*So in conclusion:*

*Andy,*

*You guys got a winner with this one. A sincere kudos to you and the entire Harman / JBL team for putting out a revolutionary industry pushing product. This really feels like the "front-suspension-fork-on-bicycle" moment in the car audio industry; you can never, ever go back once you've used /(ridden) it once.*

*PS: Andy, no doubt you guys have a long history with GM putting JBL systems in their upgraded stereo packages for their vehicles. Have you ever proposed putting a MS-8 upgrade package in their vehicles? Because my God, the price GM charges for the JBL package on their vehicles is WAY, WAY, WAY more than the street value of this product and doesn't sound nowhere even close to as good.*

*Cheers,  
Mark*

mark,

I don't understand the -20 dB thing. once calibration is finished, turn the MS-8 volume control up to -6 or so if you want to use your factory volume control. Also, if you need more level, you can also turn the gain controls on your amps up, so long as you turn them all up by the same amount.

Quote:

Originally Posted by **Tony2006**

[View Post](#)

*Hi can someone please help me. I been tuning my ms-8 for over a week now. Can someone please tell me step by step on how to tune this. My setup is double din alpine hu, focal 165vb, jl audio hd600/4. I'm running active front stage only. Tweeters are hooked up to my front channel and miss or on my rear channel. I don't know where my gain on the amp should be at before I do the calibration. I did exactly what the ms-8 install manual said. Everything sounds good except for when I listen to songs with high vocals on high volume I get clipped on my mids. Any other sogs I can go as high as I want. Can someone please help me.*

*Current setting or 60hz/12db hi pass and 4,700hz miss/lo*

*Thanks guys..*

Don't worry about the typing.

1. Connect the outputs that go to the amp channels that run the tweeters to channels 1 and 2.
2. Connect the amp channels that go to the mids to output channels 3 and 4.
3. Switch the little input switch on the amplifiers to "low" and turn the sensitivity (gain) controls all the way down.
4. Connect the output of the head unit to input channels 1 and 2.
5. Choose "skip input setup" since you have an aftermarket head.
6. In the setup menu, configure the front as 2-way, choose "none" for sub, center, sides and rears
7. Select your crossover points (the ones you've selected are fine).
8. When you get to "acoustic calibrator" and MS-8's volume control pops up, set it to -35 and go.
9. once you've run calibration in all the seats (or just the driver's seat, if that's what you want to do) select "done" and MS-8 will do its work.
10. When all of that is done, turn MS-8's volume control to about -6 or -9.
11. Use the head unit's volume control to adjust the volume. Or you can turn ms-8's volume control down to -40 or so and turn up the head unit's volume control until you hear a little distortion and then turn it back down a little bit until the distortion goes away. Leave the head unit's volume control where it is and use MS-8's volume control.

Feel free to use the 31-band EQ to make additional adjustments if you need to. Use the Subwoofer level control in the audio controls menu to adjust the amount of bass in the system. It works even when there's no sub connected

---

Quote:

Originally Posted by **radarcontact** [View Post](#)  
*Andy, what does? Are you saying to bypass the sub for some reason during setup/tweaking, or just that the MS-8 system works better in audio systems that don't already have big, additional subwoofers, i.e. vanilla OEM setups?*

*Sent from my iPad using Tapatalk*

No, I'm saying that the subwoofer level control isn't a gain control for the channel that's connected to the sub amp. It's a shelf filter that's applied to all the channels through the crossover. It boosts below 60 Hz, but never above 160Hz, so the slope of the shelf changes with boost amplitude. It's cool because when you boost the bass, it applies the right amount of midbass to the rest of the speakers to keep the illusion of bass in front, if you've managed to achieve that.

It also works without a sub, since it's applied to all channels. Let's say you had a Porsche 911 and the biggest speaker you could fit in the car was an 8" in the doors. With this control, the 8" can be a subwoofer and a midbass/midrange (to a point).

When I tell people to set the car up initially without a sub, I'm usually trying to figure out if the imaging or the EQ is bad because they have the sub turned up too loud. The next step, once the image is good and the frequency response seems right, is to add the sub and tune calibrate at the level at which the setter-upper was successful without the sub.

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*The input setup procedure looks for speaker level inputs. Pre-amp inputs won't be recognized, nor should they.*

Nope. This isn't true. MS-8 doesn't know the difference between speaker level and line level. It looks for anything on any of the inputs. That means you could use a combination of speaker and line level inputs, so long as you only use one input type per channel. For example, you can't plug something into the RCA for input 1 and also connect something to the speaker input of channel 1.

Choosing "Skip input setup" connects inputs 1 and 2, (speaker or line level) to the input of the DSP and disconnects the other inputs and skips the input EQ. If you know you have a reasonably flat 2-channel signal, there's no need for input signal "conditioning".

---

Quote:

Originally Posted by **BuickGN**

[View Post](#)

*If the input signal is too low, the MS8 will clip. I've experienced it first hand. If I calibrate at a super low volume, I get the same distortion. Try calibration at a higher level.*

Good tip.

---

Quote:

Originally Posted by **an2ny888**

[View Post](#)

*do you experience a loud noise when you reset to factory defaults? sounds like it could damage the speakers*

Turn the volume down before resetting. Also, it sounds like your amplifier input sensitivity settings may be VERY high.

---

Quote:

Originally Posted by **HK\_M3**

[View Post](#)

1) Yes

2) Sub crossed at 80hz, 24db slope, midbass to midrange 280hz 24db slope, then the passive takes over and sends the tweeter 4.7khz up

3) Yes

4) Roughly 10 o'clock

*Upper midrange and treble are a touch glossy. Sounds solid overall but lack of total volume as well.*

*How do I fix the potential phase issues on my sub.*

OK. Cool.

Try reversing the polarity of the sub--you can do that at the amp.

When you calibrate, the amp gains ought to be set at about the 2V position. Once you've finished calibrating, you can turn the amp gains all up by the same amount if you don't have enough level. Before you do this, adjust the radio's volume control and MS-8's to see if there really isn't enough. Turn MS-8's volume control way down and turn the radio's control up until you hear a little distortion and then turn it down until it goes away. That's the max for the radio's control. Leave it there if you want to use MS-8's volume control. If you don't, then put MS-8's control on -6 to -9 and use the radio's control.

Quote:

Originally Posted by **HK\_M3**

[View Post](#)

*Thanks Andy! I calibrated at -40 and set it to -06 and use my head units volume to about level 25 which is the max (Alpine 4 volt deck, tested not to clip even at full volume)*

*I will try the sub thing later today.*

*Overall a solid product, just need to figure out this volume thing. Thank you so much for coming out with a product of this caliber!*

Feel free to turn the volume of the radio up a little more than what the MS-8 says is max. The test track on the CD is recorded at 0dB. That's the loudest peak that can exist on a digital recording. Music reaches 0dB sometimes, and only on transients. We don't hear distortion very well on transients, so you may be able to turn the head unit's volume control up quite a bit higher, depending on the recording.

FWIW, the difference between the 2.8V that MS-8 wants and the 4V from your head unit is 3dB. 3dB worth of clipping is NOTHING.

---

Quote:

Originally Posted by **Frank Drebin**

[View Post](#)

*Just curious, why cant we use 0 for volume on the MS-8? It's probably in my head, but my system seems to sound better/more dynamic with the factory HU @ 22/38 and the MS8 at 0 volume vs having the MS8 volume at -6 and the HU @ 30/38.*

*Is it possible that the HU/factory amp filters out the bass as the volume is increased?*

The reason I suggest -6 to -9 is to leave some room in the digital signal for use of the subwoofer level control or some boost in the 31-band EQ. If you like it best at 0dB, then go for it.

---

Quote:

Originally Posted by **Mark the Bold**

[View Post](#)

*Well once again Andy, I owe you a beer. With a crossover of 2.5kHz or above on the fronts and the problem is all but vanished. Still can hear a wee bit of distortion but nothing even close to the original problem. In my defense, the reference Dayton series are designed to be crossed low as the woofer breaks up at around 2.5kHz per Dayton, so I always kept the xo below 2kHz for that reason. It may be the residual distortion I hear is now the woofers fault.*

*I also think you were right in that I was underpowering the tweeters significantly, so the MS-8 was probably boosting the woofers so much to clip. I damn near have the gains to about the same level as the woofers which is intuitively dangerous in my experience with active systems. But the proof is in the pudding; with the processing off the pink noise is pretty much level so these tweeters much really love the power.*

*My greatest fear of this whole ordeal was that I would need to upgrade amps because my KS900.6 with 60w per channel on the fronts weren't cutting the mustard. MY access cab tacoma doesn't leave me a lot of room for multiamp setups + ms-8. The Ks900.6 and MS-8 fit beautifully under my two seats and out of the eyesight of the neighborhood punks...*

*Regarding the off axis, I really don't have a lot of options short of glassing some pods in the a-pillars. Later on I'll try my*

*Arc 6000 6.5" woofers (apparently made by Rainbow) in lieu of the rs180-4 to see how they fare. They might perform better, but I originally bought the RS180's because of their off-axis performance being some of the best in the industry AND being aluminum coned which is reassuring out here in the desert.*

*I might need to bring the sub up to 30-120Hz but I'll see how they do first. But I'd really hate to get rid of the RS180's for this reason. They've been loyal friends for many years and on many installs I've done for friends and coworkers....*

*Thanks again Andy.*

Cool!

Hey, you might also consider adding a small midrange to the front to make it a 3-way. Look for a little 2" or 3" that you can use between 800Hz and 3kHz. That's fix this completely. If necessary, just put a cap on the tweeters (4.7uF) and run them in parallel with the new little mids. I rant about this 3-way kind of system all the time. It's designed to eliminate exactly this issue.

A pair of these would probably do the trick: <http://www.parts-express.com/pe/show...umber=264-1124>

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*What do you mean by bi-amping? Adding a tweeter on the other channel? - I personally don't see the benefit over a simple passively-crossed component set-up.*

*Not having a tweeter in the center right now though is surely not ideal! You need to add one!*

*Are you having problems with system volume? I have the sides running off of the MS8 and it gets plenty loud. Sure they are 2 ohm but I don't think 4 ohm will make much of a difference. Others have had good results running the 4 ohm factory speakers off the MS8, some of them in similar set-ups as yours.*

*You know that the center should ideally receive at least as much power as the fronts, right? If I were you, I would consider running the L,R,C at 75W each, the underseats at 75W each and leave one channel empty. If you HP the underseats at ~ 70Hz I bet 75W is enough in most cases. Then let the sub do the rest of the work.*

*With L7, the center plays most of the vocals so you want it to be able to cover the entire frequency range AND have adequate power. Perhaps you should even bridge 2 amp channels into the center!*

Right on all counts.

---

Quote:

Originally Posted by **nick650**

[View Post](#)

*a proper full range 4" will work*

A tweeter is important in the center channel. I'm not going to type another 1000 word missive about dispersion, directivity and the crock of BS that is this whole "tweeterless" fad. I will say, however, that besides cost, there is NO benefit to eliminating the tweeter.

I posted "right on all counts" above, and gave someone the impression that bi-amping the center channel was a bad idea. Here's some clarification: If you have an extra channel, bi-amping the center is a way to use the extra channel. It isn't

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necessary, but if I had an additional channel and nothing to do with it, that's what I'd do. In fact, in my car, every voice coil has a channel--and I have 24 channels (but no MS-8).

---

Quote:

Originally Posted by **Fast1one**

[View Post](#)

*This is simply not true. A low pass filter causes a steady INCREASE in impedance above the cutoff, while a high pass filter causes a steady increase in impedance below the cutoff. When you wire a woofer and tweeter with a lowpass and highpass, respectively, the effective impedance remains the same provided that the crossover is designed properly. A 4 ohm tweeter and a 4 ohm woofer wired to a 4 ohm crossover is still a 4 ohm load. Below the crossover frequency, the woofers impedance transfer function dominates, while above the crossover frequency the tweeters impedance dominates.*

*At lower frequencies, the tweeters impedance is very high while the woofers impedance is very low, creating a voltage divider which drives the majority of the power to the woofer. At high frequencies, the opposite is true and the tweeter receives most of the power. Near the crossover, both the woofer and the tweeter are receiving half the power, but they are also working together to create the sound making the drop in power moot.*

*Bi-Amping has no sound pressure advantages but offer other advantages, such as the ability to apply staggered power to inefficient transducers and the ability to apply individual time alignment.*

Exactly. There are two caveats:

1. There is some insertion loss with passive components--all have a parasitic DCR component, but it's usually not a big deal.
  2. The impedacnce of the passive system is often not linear, as the circucuit is often used to apply some response shaping.
- When the amp clips, it clips.

So, I think the real topic here is that the active design may help to eliminate the distortion in a tweeter (for example) when the amp runs out of power driving the woofer (for example). This does not increase the power of the amplifier, but it may reduce distortion under some circumstances.

It is NOT an important enough consideration to warrant making a decision either way. Independant and easily adjustable crossovers and adjustments of relative levels of speakers is.

---

So, when MS-8 runs input calibration, here's what happens:

The signal on the CD isn't random pink noise. It's a very specific signal designed to allow MS-8 to understand precisely what happens in the factory system in both time and frequency. It's also different in right and left, which allows MS-8 to determine whether a channel is left, right, or mono.

"Input Low" means that there isn't enough level for MS-8 to do what it needs to do and maintain acceptable resolution of the signal, once it's converted to digital. In other words, "Turn up the volume". IF you've turned the volume of your radio all the way up and MS-8 still reads "low", then you need a line amp or you should use the radios's speaker level outputs.

"Input High" means that the voltage of the radio's output signal is too high and will cause significant clipping of MS-8's input--too much for MS-8 to assure low distortion performance. "Turn the volume down" or "attenuate the output of the radio some other way" is what that means.

"Input None" means that MS-8 does not see the signal that's on the disc modified in a linear way in either time or frequency. If the signal is not sampled at 44.1k, + or - about 0.5%, this will also cause a "Signal None" condition. We've built sample rate correction into the algorithm and that's what allows the + or - 0.5%. This is a significant accomplishment and one that isn't included in other products of this type. In order for MS-8 to analyze the signal in the time domain, there has



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to be a baseline, and 44.1k as the sampling rate is the baseline.

"Signal Noisy" means that the signal is recognized but that it's so heavily clipped that MS-8 can't use it.

The reason that shorted inputs would cause a "Signal None" condition is because MS-8's first "question" is, "Is there anything on the input?" A short is a "Something". Then, the next question is "Is the 'something' similar to what's on the CD?"

There's another condition that has been reported a couple of times, and that's a condition in which MS-8 reads "Signal Low" until the volume control of the head unit is increased to a certain point at which MS-8 reads "Signal None". This indicates that there is something non-linear, that isn't clipping, that happens to the signal at that point. I haven't had an opportunity to do any investigation, but this has happened in two Audis with the B&O DSP system.

Once MS-8 reads "OK OK OK", that means that it recognizes the signal, that it's loud enough but not too loud and that the level between left and right is the same, within a couple of decibels. Then, when you give it the command, it measures the relative delay of the signal on each channel, lines up the initial impulses (and uses another sneaky trick to accurately measure the delay of low passed signals), combines left channels, combines right channels, applies a 200Hz low pass filter and an all pass filter to the mono channels so they'll sum with right and left without phase errors. Then, MS-8 applies the same kind of EQ to the input signals that it uses during acoustic calibration.

The way EQ is accomplished is another MUCH more complicated explanation.

---

So the reason for the three way is to avoid using the midbass (6") in a region where, a) the on-axis response is rolling off, b) where the peak in the response from the major cone distortion mode doesn't roll off as fast as the rest of the response, 3) where the dispersion of the midbass narrows.

If you use a 2-way, you have to cross the tweeter low enough to meet the midbass, c.3500Hz. You can ONLY use the much higher crossover on the tweeter if you have a small midrange to bridge the gap.

So, you can pick and choose the "rules" you want to follow, but it doesn't make any sense to follow three of them, blow off the others and then come back and post, "In my experience, Andy's suggestions don't work."

I do suggest keeping the little mids OUT of the dash and out of the A-Pillars. A-pillars do one thing well--they raise the image. If that's the most important thing to you, then go for it. However, width will suffer. Image size will suffer.

Since "performance" is subjective, some of you will prefer all kinds of other stuff--see the whole midbass thing. MS-8 tunes basically flat from 160 Hz to 1kHz. For those of you who compete in MECA or who LOVE the sound of your Beats headphones (I like Beats headphones, but not because of the bass, but because of their creative use of multiband compression), you'll want to use the 31-band EQ to boost between 100Hz and 500Hz. MS-8 is not designed to make the 6x9s in your doors move your pant legs. It's designed to place the image of the bass in the front and to allow you to boost the bass with the sub control without changing the apparent location of the bass. Why? Because I like that, because I spec'ed it and because I've made a majority of my customers happy with that for 25 years. This, however, did not make judges happy. They like big, fat midbass. I don't like big fat midbass because when I hear that, I hear much poorer definition in vocals, piano, the lower ranges of all string instruments and the percussive parts of those string instrument sounds. In my experience, that kick-your-ass midbass happens at live shows when the system is loud and the midrange is flat, but it doesn't happen at lower volumes. At lower volumes, the snap of the sound of someone whacking the string of the bass guitar with the side of his thumb sounds percussive, and that's what MS-8 is designed to preserve. If what you hear or what you like is different, no problem. This is why there's an additional EQ that you can adjust.

---

Quote:

Originally Posted by **Frank Drebin**

[View Post](#)

*Hey Kelvin, thanks for the response.*

*Is your reasoning for putting the woofers in kicks to get the midbass "in front" of me, because the center channel can't do it on its own?*

*There is no room in my door for mids, unless I squeeze it in with the midbass down at the bottom. I probably could work something out with kicks for the 3" mids, but I don't have room (or don't want to make room) down there for 6.5" drivers. Although the direction of the build has changed, I still want to remain as stealth as I can.*

*Right now I'm leaning towards AndyInOC's advice to just go with a simple 2-way system, with the woofers in the lower door and mids in the upper sail panel, perhaps crossed over higher than a traditional 2-way (4-5k hz?) on Andy W's advice:*

*If tweeters have to go in the dash or the pillars, cross them high.*

*As for the center channel - I'm going to see if I can squeeze a 4" in there to play a little lower, I think they should be able to play down to 150 hz?*

The worst thing you can do with the center is to TRY to make it play what it cant. MS-8 will steer center-steered midbass BELOW THE CROSSOVER to the front left and right. He's suggesting kick panels for the midbass because the similar pathlngths will preserve the phantom center image for those sounds (well, he SHOULD be suggesting it because of this). If you'll use a bunch of power and you want the car to play loudly, then cross the center over higher--200-250 and let MS-8 do the rest. If it doesn't need to play so loudly, then experiment with a lower crossover.

---

For the center channel, I think 250 Hz is probably the cutoff.

I used to cook this pretty cool chicken thing when family came over for the holidays. One of my relatives asked me for the recipe. Of course, it included a bunch of butter, cream, shallots, etc. The recipe was super simple. A few weeks later, I got a call..."Are you sure you gave me the right recip's? Mine didn't turn out so well."

"Why?" I asked. "Did you follow the recipe?"

"Yes, but I made some substitutions because I don't like all that fat and shallots were too expensive."

"Hmmm..You liked it when I cooked it." I replied. "What did you use instead?"

"For the shallots, I substituted garlic powder. For the cream, I substituted skim milk, and for the butter, I used olive oil because it's much healthier. I don't think your recipe works very well."

"Well, MY recipe works fine. It sounds like your recipe didn't work very well," I countered. "To avoid confusion, maybe we should use different names for our versions of the dish. Why don't you choose one and then I'll choose something else."

No problem, Frank. No offense taken and there's no need to mince words. Sometimes I TRY to get someone to yell at me here.

---

Quote:

Originally Posted by **strakele**[View Post](#)

*I have 3 subs (2 in back ported, 1 up front sealed) with a combined total of around 2000W on them. I'm fairly certain I have enough sub power. I just recently added the front sub and have by far the best midbass I have ever had. Kick drums have absolutely fantastic impact and I'm in love. But it's the higher tuned drums - the tom toms and snare that are lacking impact. Their fundamentals are outside the range that my subs play, I believe.*

*And yeah, I know just boosting that range with the EQ can make it boomy, which is why I was hoping that wasn't going to be the answer. When running from the 9887, the system doesn't sound boomier, it just has that extra impact that I want from the other drums.*

*Thanks for the reply.*

Use the 31-band. That's what it's for. You may want to boost between 60 and 500.

1. In an all active system (MS-8-based or not) you should always use protection caps on tweeters connected directly to the amp. I suggest 20uF. This will not adversely affect the crossover, but will protect your tweeters from a failed crossover, incorrect setup, failed amp or turn on and turn off pops. This is really important and isn't fodder for some esoteric dispute or debate. It's like making sure your race car has brakes or a parachute. Some contrarian might tell you that brakes or a parachute add additional weight to the car which compromises its power to weight ratio, but he would take this position out of an insatiable desire for attention of any kind and not because his position has merit in any practical sense. The trade-offs are obvious.
2. Set the gains for 2V. That matches them with the output of MS-8. If you're trying to decide whether to use your amp to run your rears or your tweeters, I suggest the tweeters. In "run mode" with L7 on, only ambient information will be sent to the rear, so applying all that power has NO benefit. IF you find that the output level of the MS-8 for the rears is limiting the overall output level of your system, turn all the amplifier gains up by the same amount AFTER calibration. You'll have less rear, but I don't think anyone here will find that objectionable.
3. When considering how much power you need for a pair of speakers, remember that EQ may require more or less power to be applied. If MS-8 needs to boost somewhere by 6dB, that 4x power. IF MS-8's output is 30 watts MAXIMUM, that means that at frequencies where there is no boost, MS-8 can provide about 8 watts so that it can provide 30 unclipped watts for the boost--put another way, the boost will allow 6dB of clipping if the internal amplifier is producing 30 watts at other, non-boosted frequencies. This applies to any amplifier, not just MS-8's internal amp.
4. the front is more important than the rear, so allocate power accordingly.

Here are the tracks I suggest using to listen to Logic7.

1. "Desperado" (2-channel downmix) from Hell Freezes Over--Eagles
2. EMMA disc Track 11
3. "Big Blue Ball" from Big Blue Ball
4. "Ancient Highway" from Days Like This--Van Morrison
5. "A Case of You" from Live in Paris--Diana Krall
6. "Open Car" from Deadwing--Porcupine Tree
7. "Can't Find My Way Home" from Live from Madison Square Garden--Eric Clapton and Steve Winwood
8. "P-Leather" from GrooveYard--FreekBass
9. "Dream Cafe" from Dream Cafe--Greg Brown
10. "Have a Little Faith in Me" from Bring the Family--John Hiatt
11. "Never Turn Back" from Piety Street--John Scofield
12. "Repo Man" from God Willin' and the Creek Don't Rise--Ray LaMontagne and the Pariah Dogs

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13. "Tala Matrix" from Live in San Fransisco--Tabla Beat Science

14. "Chocolate Jesus" from Mule Variations--Tom Waits

I chose these because of the quality of the recordings and the spatial attributes that, in many cases, include plenty of room information--and rooms of all sizes. A few of them are studio recordings but include lots of other details that are really interesting on really good systems.

There's an additional spoken track that I made to demonstrate logic7. That's mine and I'll post it on dropbox and post a link here in a little while.

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Quote:

Originally Posted by **t3sn4f2**

[View Post](#)

*There can be a change in how the system sounds over the upper volume depending on what head unit volume setting you pick when running the input setup. This is because those honda head units have a volume depending loudness contour that boost the bass and highs as you reduce the volume.*

<http://www.diymobileaudio.com/forum/...surements.html>

*So if you calibrate at a very high volume where the response becomes flat, you will have the loudness benefit at lower volumes. And if you calibrate at lower head unit volumes where the response is contoured, you will have a reduction in bass and highs at higher volume settings and a flat overall response in all lower volume settings. Due to the ms-8 input setup nulling the loudness contour and the head unit reducing it further at high volume settings.*

*This is separate than what the OEM amp does to shape the response further for the particular car and speakers.*

Right answer. Thanks.

---

Posted by Frank Drebin:

Quote:

Originally Posted by **drpepper**

[View Post](#)

*Hi guys*

*Somehow my display port on the ms8 broke. I'm honestly not sure how it happened. I noticed my display wasn't turning on so I went to the trunk and the plug was wiggly. Well now I can't get the display to come on and the port is loose.*

*Anyone opened these things up? Would it be a simple solder job?*

*I think Andy in the past has not recommended trying to DIY repair.*

*A little tip from someone who has broken the display port as well (obviously not for you, but for others reading):*

*Make sure you secure your display cord somehow, so that there will be no stress at all at the connection at the MS8 in the case that you forget to disconnect or pull on the display wire.*

*I'm zip tying mine to the amp rack, the connection at the unit is quite easy to break.*

---

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Send the unit back. It appears that the board is broken. I don't suggest trying to repair it your self--in fact, we're not going to repair it, we're going to send you a new unit.

Pulling on the cord or pulling on the plug won't cause this. Pressing DOWN hard on the connector when it's plugged in will cause this. Where is the unit mounted?

---

The idea behind the cap is simply to prevent pops and errors from sending low frequencies to the tweeters and the value should be chosen so that the high pass filter is at or outside the band that you'll require the tweeter to play--you'll use the active filter as the real high pass filter.

The suggestion of 4uF is not a good one. Use 20uF.

---

Quote:

Originally Posted by **quietfly** [View Post](#)  
*I have a question about the center channel and xover points. If i set the center channel xover to run from 160and up will all of the midbass that would have been processed in the center be produced by the left and right midbass speakers? or will my center imaging lack that punch?*

Everything that's below the center high pass will be sent to the left and right. Then, everything below the left and right high pass will be sent to the sub. This is why it's important to choose the right crossover for the center.

Let's say you install a 2" widebander because some company's marketing hooey says it's flat to 100Hz. You set the crossover to 100Hz but the speaker is really 20dB down at 100Hz but only flat to 400Hz. Everything that's below 100Hz will be sent to left and right, but everything between 100 and 400 will be lost or attenuated or boosted like crazy in the center. That will suck. Be reasonable with the crossover and I think you'll find it works fine.

---

Quote:

Originally Posted by **taibani** [View Post](#)  
**Andy**  
*I am using lossless audio on my iPhone but I'm losing some SQ through my cars analog wiring.*  
*Would you recommend running the ms-8 signal acquisition/ input setup from the iPhone? I will probably listen to 80% iPhone  
10% radio  
10% cd.*

Run your iPod through MS-8's AUX input. If your head unit controls the iPod, then cut open the iPod connector and run the AUDIO wires into the MS-8 and leave the rest alone. Then, you'll have pristine audio from the portable and still be able to control it with the head unit.

---

Quote:

Originally Posted by **taibani** [View Post](#)  
**Kaigoss** *seems to think its specific to use of high level inputs*

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OK, speaker level outputs swing voltage above and below 6V (you'll read 6V to chassis on BOTH speaker leads, (+ and -). This applies to almost ALL factory amps, all factory head units, all speaker level outputs from all aftermarket head units.

When the radio turns off, the 6V on the + and the 6V on the - don't fall at precisely the same rate. The difference in that rate is AC and it's very low frequency. When the output of the radio is connected to a speaker, the few millivolts of difference isn't enough to make a loud pop or even a click in the speaker. If that few millivolts is amplified by 20 or 30dB, then it is enough to make a pop--sometimes a loud one. This is so pervasive in OE systems that it's the reason we didn't include audio sensing turn on. In about 80 percent of the use cases we tested, this created really terrible turn off noise. Since then, we've found a way around that for newer products.

If your calibration requires huge amounts of low frequency EQ, this will make the problem worse. Since, when you've used Kaigoss's method, the EQ of the bass has changed substantially, this has likely reduced the pop.

His "mod" or "method" is a valid way to connect the sub amp, but I've put MS-8s in plenty of BMWs and have NEVER had the bass problem or had to do it this way. I can say, however, that if you use the under-seat woofers as midbass and a sub in the trunk, the difference between processing on and processing off is HUGE. There is far less midbass with the processing on and way too much between 60 and 400Hz with it off.

As I've written before, MS-8 uses output between 50 and 80 Hz to level match the sub channel. It could be that in the BMW with the under seat woofers and the sub in the back, the subwoofer output in those frequencies is attenuated by the back seat and the metal plate behind it. That would cause MS-8 to increase the level of the sub and decrease the output of the midbass to match it. Then, the EQ would probably boost the low end of the sub output. If you do Kaigoss, there's no EQ applied below 50Hz, and this is probably the difference.

The Kaigoss deal does prove one thing pretty well--time alignment between the sub and the rest of the system is unnecessary.

IN the 3-series that Gary built that he used to use in IASCA competition, the sub fired into the cab through a big hole. This probably prevented this from happening in that car. In other BMWs, I've used MS-8 power and a basslink. This required some screwing around with the subwoofer's gain control to get a good tune, but it sounds great.

I would find one small bit of troubleshooting helpful. If any of you who have used the "mod" could please listen to the same piece of music through the head unit and then with an iPod (or other portable) playing through MS-8's aux in and tell me if the bass sounds the same or different, that would be really helpful. Through a bunch of reading, I've discovered that the sub channels of some of the BMW systems are far more power than the mid and high frequencies. This could be part of the problem and the little experiment I've asked for will help me determine if the input EQ is a contributor.

Thanks!

---

Crossing your midbass over at 100Hz isn't a bandaid. Where did this preposterous idea come from--that every speaker has to be driven to the lowest point possible? If 70Hz is the  $F_s$  of the driver, good audio systems engineering practice suggests that's a point where the driver SHOULDN'T be driven, as it's the point at which it makes the most distortion. That's what  $F_s$  is! The point at which the motion of the moving assembly continues to move even after the signal goes away.

Ideally, you want your speakers to move as LITTLE as they have to, not as much as they can.

---

OK. Cool. BTW, Looking past the mirrors and slightly up is urban legend. The only thing that will do is remove a bit of high frequency from the measurement, so the EQ will boost the highs a little bit.

---



Remember, MS-8 is an EQ. If you have your tweeter amp gains set lower than everything else, MS-8 may attempt to boost the high frequencies to compensate. All systems generate some hiss somewhere and that hiss will be amplified by the EQ if there has to be a bunch of boost. Turning the amp gains for the tweeters UP and recalibrating will result in less high frequency boost and less amplification of the hiss.

## KAIGOSS METHOD

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MS-8 uses 50-80 Hz to check the level of the sub to match it according to the target with the front speakers. If there's a huge peak there in the sub and the midbass, and the crossover is set lower than that, the result can be a lack of midbass and bass too.

>>>>>>>

Kaigoss69 :

1. Run set-up with 2-way front and no sub. Set the subsonic at 20Hz. Lo/Hi at 150Hz, 24dB/oct (just do it...). Crossovers on amp off.
2. Run calibration
3. Set the amp such that the input from ch 1&2 goes to all 4 channels
4. Enable high-pass filter on amp for underseat woofers. Start with 60Hz, 24dB/oct.
5. Enable low-pass filter on amp for subwoofer. Start with 60Hz, 12dB/oct

Edit:

6. Set amp gains to your liking

Andy Wehmeyer :

Yes, this^^^, for now while we finish working on this level matching issue, which seems to be at it's worst in BMWs with under-seat woofers. I listened to 30 MS-8s over the last two weeks in Asia in every car imaginable (except for a BMW and a Winnebago) and nearly every one sounded good.

For those of you who have an extra channel, you can also map your subwoofer to the front low (in a 2-or 3-way front system) and that will treat the subs as fronts and bypass the level matching

---

Quote:

Originally Posted by **slinger1**

[View Post](#)

*i have 2 subs on a mono amp now fed from Headunit with 2 rca's...(red/white)..when i install the ms8 i remove the rca's coming from headunit to sub amp and run just 1 rca from ms8 to my amp for subs??or do i use 2 channels from ms8 to my mono amp and make 1 sub bass and 1 mid bass? or just 1 channel for both to the amp/subs....the more i read the more im confused.....I have also yet to find a shop in my area (Kansas City Mo.) that has installed the Ms-8 so i will be attempting the install myself..*

If you want to run this supposed "workaround" from the start, then you'd use two output channels of MS-8 to feed the mono amp. When you get to the menu for choosing the "number" of subs, you'd choose "none". Then, for Front, you would identify front as "2-way" and assign the sub channels as "Front Low" and the front speakers as "Front High". Then, choose something like 80Hz as the crossover.

FWIW, I've set up many MS-8s and will agree that OCCASIONALLY, the level matching between the sub and the front channels isn't right the first time. I'm working on that, but that's a different discussion entirely. In EVERY case where the level matching has created a lack of midbass and too much bass, I've been able to solve it by adjusting the sub amp gain UP if there's too much bass and DOWN if there's too little. This may seem counterintuitive, but it works.

Here's why: MS-8 uses 50-80 Hz to figure out the level of the bass. It uses 80-300 to figure out the level of the midbass-midrange. Then, it adjusts the output level of the channels. Then, it EQs the combination of channels. If your sub crossover is set close to the 50Hz spot and the response of your subwoofer has a giant peak between 50 and 80Hz which is common for small sealed boxes, then MS-8 will reduce the level of the channel. This can result in too little bass. If your subwoofer's response has a big peak at 40Hz, then MS-8 will not reduce the level because most of that peak is outside the band of frequencies it checks. That can result in too much bass.

Similarly, if your midbass drivers have a HUGE peak in the response between 80 and 300, then MS-8 will reduce the level of those channels. This is the problem in BMWs with underseat woofers and an additional subwoofer--especially if the

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subwoofer is in the trunk--the seat and the metal wall filter out much of the midbass from the sub and the midbass speakers are super loud in the 80-300Hz region. The Kaigoss Method simply eliminates level matching between sub and midbass and uses only EQ to tune the bass.

Identifying the subwoofer channels as front low, does the same thing. Eliminates the level matching part of the subwoofer algorithm.

So, the skinny here is that MS-8's level matching works GREAT under some conditions and not so well under others. The key (until I can get something done in software--which won't be in the next few weeks) is to do a little work in understanding what situation your system presents to MS-8's algorithm.

First, think about the kind of sub you have--small sealed or ported? Choose 80Hz as the crossover and run the autotune. If your box is small and sealed and you don't hear enough bass, turn the gain of the sub amp DOWN so MS-8 will increase the level of the channel and boost using the EQ. If you have a ported box or big midbass drivers or both, and you don't hear enough midbass and too much bass, turn the gain of the sub amp UP and the midbass amp DOWN down and recalibrate. Once you get to a point where there aren't any huge peaks or dips that you can hear (this will be obvious and one of those "light bulb moments") then use the 31 band EQ to fine tune to your preference.

The midbass region, let's call it 50-500Hz in a car is the most problematic of all. There are a thousand myths about why and about what has to be done to get good midbass and a thousand opinions about how much midbass is right. Regarding MS-8 and the myths: It's very difficult to build an algorithm that can reliably deal with +/- 40dB peaks and dips in the responses between speakers driven by separate channels in this region. MS-8 does work, just not always right the first time depending on your system. Regarding the opinions: MS-8 provides an EQ (31-band) that will allow you to fine tune. It isn't a band-aid. It's an admission that the target curve doesn't make everyone happy. MECA and IASCA competitors are encouraged to boost the midbass for competition.

When I was in Indonesia last month, I listened to thirty or so cars with MS-8. Some had sealed boxes and some had vented boxes. Some of the owners had use the 31-band EQ to tune the midbass and some hadn't. EVERY car had bass impact from the front. Every car had smooth and natural sounding midbass. All of the cars imaged really well and all sounded similar. None were BMWs with woofers under the seats, though.

I guess the point of my rambling here is that, unfortunately, a little tuning and experimentation may be required. I think we've established that in BMWs with the woofers under the seats, the Kaigoss method is more reliable and a bit easier than the standard method. I think we've also begun to understand why that's the case. Since we're beginning to understand why, then we have a basis upon which to determine whether that method should be implemented in other cases too, thanks to all of the contributors here and because I read your posts, take them seriously, think about them and attempt to understand what they mean and use them to provide what I hope is useful feedback.

Believe me, if I still had my team of engineers that developed this thing, firmware updates would be quicker than they are now. I'm not going to explain that in detail. I'll just try my best to help all of you with the tools I have and continue to try to get the rest of the tools I need.

---

Quote:

Originally Posted by **duro78**

[View Post](#)

*Imo the ms8 shouldnt of been released yet, it shouldn't of been green lit considering all the issues it has. I love my ms8 and truly do appreciate the time and effort Andy has spent helping everyone but I believe it wasn't ready for market yet.*

*Sent from my DROIDX using Tapatalk*

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Well, it isn't perfect and depending on your system and your setup, implementing it may require a few adjustments, especially if you are used to a conventional process--adjusting crossovers AFTER tuning, especially. We've sold about 5000 of these things and the VAST majority of them work well. There are some known issues and we're working on them. The following three are the "biggies".

1. Jet engine noise. I know of 12 instances of this.
2. Level matching between sub and front under some conditions. BMW's with super-loud under seat subs is the system that consistently has this problem. I've posted suggestions about what should be done for other cars, and Kaigoss has a configuration that seems to work in BMW. FWIW, we won several IASCA contests with a BMW using all the factory speakers and an additional sub and did NOT have this problem.
3. RCA and display connectors. Although it's a PITA, we replace units for these failures.
4. Compatability with some OE Bluetooth echo cancellation algorithms. There's a firmware update that helps in SOME instances. Not every one can be fixed. Bummer.

The MS-8 does not work well with the Linn system in Bentley Continental. They use a phase inverting all pass filter in the factory EQ and MS-8 cannot correct it. MS-8 is also incompatible with the B&O systems in Audi. The setup track isn't recognized (signal "none"). There are only a couple of things that would cause this--non-linear EQ of some sort, a seriously erroneous sampling frequency that isn't close enough to 44.1k to be fixed by our algorithm or a different sampling frequency altogether. I don't have access to an Audi with that system, so that one is low on the list.

On balance, there are several thousand cars that sound much better because of MS-8. We'll keep working to sort out the issues.

---

Quote:

Originally Posted by **pionkej**

[View Post](#)

*I have a question for the "Kaigoss Method" workaround. Does this also work if you run the center full range? What I mean, is if I cross my left and right at 80hz or so, and run the center full range (to cross passively with the sub at the amps), will any sounds below 80hz on the left and right be directed toward the center...or will they be "lost".*

*I'm running at 2-way left and right, but I'm crossing them passively at the amp, and since my amp doesn't have a bandpass function, I can't also cross over to the sub ala "Kaigoss Method". I want to run sides and rear on the MS8, and the only way to have enough channels on the MS8 is by crossing the sub passively, and I can only do it by running the center full range. Therefore I have the question above.*

Connect the sides and rears in parallel to open more channels for the center and sub. Logic7 steers all information common to left and right to the center. Below the center crossover (in MS-8), center sterred sounds are sent to left and right. Below the left and right crossover, they're sent to the sub. In addition, the lowest crossover point for the center is 50Hz, so it isn't an appropriate sub output.

---

Quote:

Originally Posted by **Nathan\_h**

[View Post](#)

*I'm setting up a BMW \*without\* an additional subwoofer. Based on this excellent information about what frequencies are used for level setting, I should call my underseat woofers "subs", and the two way doors (that have built in crossover) a one way front -- with the crossover from the underseat woofers (called Subs in setup) about 200hz.*

*Any other nuances I should take into account. (I don't have a center speaker.)*

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Connect the front speakers to outputs 1 and 2. Connect the under-seat woofers to outputs 3 and 4. Connect the rear speakers to outputs 5 and 6. Then, choose "none" for subs. Identify the front as 2-way. Choose 30Hz as the subsonic filter, 12dB/octave. Choose 200Hz as the front hi/low crossover, 24db/octave. Choose 100Hz 24 dB/octave for sides. No rear.

Then, use the subwoofer level control in MS-8 to boost the bass. This will provide good midbass, an appropriate crossover for the front mids and the ability to adjust the low bass as if you had a sub.

I've done this many times in 3-series BMWs and it works great.

---

Quote:

Originally Posted by **thehatedguy**

[View Post](#)

*Andy, have you guys used the MS-8 with cars that have front mounted subwoofers?*

*Curious as to how it would react to say a sub in each kickpanel/floor driven by a mono signal.*

So long as the crossover is low and steep, it'll work fine. However, front subs are completely unnecessary. Completely. Well...unless...you routinely have rear seat passengers and you like a lot of bass but they don't.

---

Quote:

Originally Posted by **lavesa**

[View Post](#)

*Hi Andy,*

*Would there be a way to configure this scenario where the front speakers could have a HP of 100 and the mid-bass under the seats have a band pass of 80-400?*

No, and there's a reason for that. Overlapping like that leads to far more problems than it solves--every time. In cars it's best to minimize the number of speakers mounted all over the car all playing the same thing.

Someone will come here and disagree, but I've been doing this for 25 years and used to believe that it was cool to have the midbass and the sub playing the same thing and that it helped with "bass up front". It doesn't. It sucks and it's one of the reasons that so many factory systems that include subs sound so bad--many factory systems are tuned this way and it's just WRONG.

One day, a long time ago, I had this very conversation with a very well known and very successful IASCA competitor. He and another very well known competitor had been tuning on the car for days and the midbass was nasty--thick, undefined, all over the car, completely unnatural sounding. Fortunately, his EQ had memory slots, so I asked him to save what he had and we retuned. We used a conventional arrangement instead of the overlap and it was way better. He'll never admit it, though.

---

Quote:

Originally Posted by **i\_theo**

[View Post](#)

*Yes Kelvin and thanks for your contribution in this thread seriously.*

*I read 292 pages, JBL FAQ, JBL Manual and your posts too .. seriously .. I get shock when you say i ask a stupid question.*



*Untill now i'm sure no one using single rear channel for 2 way center channel to utilized full 8 channel of JBL MS-8 discussed in this thread .. i maybe wrong .. but i'm sure i'm right.*

*I just want to know is it works or not in theory ? because i prefer using 2 way in my center channel than 2 channel for rear .. so i can put the 1 rear channel left in the middle back roof like pionkey build log but only use 1 rear channel to make ambience and rear fill concept for sense of large space.*

*One thing that i don't know is L7 reverse 1 channel in the rear so where is it SL or SR ? So at Calibration and Setup i can choose SL or SR.*

*Rear Channel really effect for live recording (and every out of phase information to sent to the rear). I can't hear the different when i shut off one channel of the rear after calibration.*

*So i think to use only 1 rear channel and maximizing the Center that avoid me to make pasif xover .. my experience is a cap doesn't work in the center channel because the midbass will roll off naturally above beaming point and some time i hear the break up noise and sibilance and distortoin from tweeter playing midrange at upper midrange Frequency.*

*Using 2 way MS-8 will Level Matching between my 6.5 Inch Center Midbass and 1 Inch Tweeter pointing at windshield and i can use 24db step xover in the beaming point in my midbass and to make EQ more easily.*

*Thanks very much.*

One side channel isn't an option. Just use a passive on your center or an amp with a built in crossover. The biggest advantage of the 2-way between mid and tweeter is separate time alignment (for the mid), but it won't matter for your system because the mid and tweeter are in nearly the same place and mush of what you hear will be reflected off the windshield.

---

Quote:

Originally Posted by **venkiee** [View Post](#)

*Andy.. I have a question for you...*

*You might have seen my setup as I posted... I am not a boom boom type listener... and more like studio kinda...*

*In this case, can I remove all the amplifiers and hook up the speakers and sub to MS-8??*

*Will MS-8's amplification be sufficient to handle all the speakers and sub??*

*Your detailed answer will be appreciated...*

Running all of the speakers off MS-8 works fine, so long as it's enough power to make you happy. I recommend using a bigger amp for the sub. We (people) like about 9dB more bass than mids and highs in cars and ittakes 8x the power to provide that 9dB extra (if the speaker sensitivity is about the same). Use a bigger amp for the bass.

---

Guys,

The time alignment algorithm looks for a peak in the impulse response. It'll pick the speaker with the most high frequency content. Connecting the sub WILL NOT mess with midbass time alignment. Connecting the sub to the front low does two things:

1. It eliminates the sub to front level matching part of the algorithm which is sometimes confused by a sub response with



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weak midbass and a midbass response with a huge peak between 80 and 300 Hz. This is what happens in BMWs with underseat subs.

2. It relies on the EQ to match the bass and midbass to the target.

That's it. No mystery here.

---

Quote:

Originally Posted by **pionkej**

[View Post](#)

Andy,

*I have another question on how the MS8 handles side/rear fill. This time I'm curious about how the delay is figured.*

*Let's say the MS8 target is 20ms of delay for the fill. I'm curious if that amount is additive to the distance or if it's total delay. By that, I mean, if our rear speaker is 5 feet behind us (and we use a rough approximation of 5ms), does that channel have a delay of 25ms (20ms from MS8 "target" + 5ms physical delay = 25ms total) or a delay of 20ms (20ms from MS8 "target" - 5ms of measured physical delay = 20ms total).*

*I may be splitting hairs asking, but I'm truly curious since I'm considering bi-amping side and rear fill off the MS8's "side" output since I don't have enough channels for both. With my planned locations, there is nearly a 7'-0" difference between the two locations and that could cause some large differences in delay, so I'm trying to figure which should be used for calibration sweeps.*

*Thank you for any help you can give as it's greatly appreciated.*

Logic7 delay is added to the delay calculated and added to the signal for time correction. Running sides and rears in parallel off the side outputs is fine. There's VERY little difference between 5.1 and 7.1. This is definitely splitting hairs. Cleaning the inside of the windshield probably makes a bigger difference than the time alignment settings in the back. Well...I take that back. If the near side speaker is really close, then you want MS-8 to delay it, but that's the one it's going to "hear" during the sweeps, so long as it has a tweeter.

---

Quote:

Originally Posted by **CobraVin**

[View Post](#)

*Ok, boosted tweets on the passives and its much better, here is my latest settings*

*ms8 gain at 25*

*sub sonic at 30/24db*

*rears at 170hz*

*center at 120 hz*

*front/sub 80/24db*

*midbass to mid/tw combo 250hz*

*I'm still trying various combos*

*time aligning mids separately by disconnecting tweets didn't make much of a difference*

*questions*

*I know about turning sub gains up during calibration to lower overall bass but...*

*#1 If I'm OK with the overall bass from everywhere except the sub (too loud) cant I just turn down the sub gain after calibration? because that's what i did and it sounds good, but didn't know if that would negatively effect anything else.*

*#2 When I did input cal after fixing my rca i noticed the signal the signal from the h/u said too loud then noisy, I assume its starting to clip and i should try not to go past that point on the volume, but is that an accurate indicator or does it depend on the ms8 volume, I'd like to have it so I can turn it all the way up on the H/U without clipping it, is there a way to test this with the input audio track?*

*#3 Is there a way to change the x-over settings without inputting all the channels locations again?*

*#4 since the MS-10 may only exist in my dreams is there a possibility of some 2 way x-over modules that would link to and be controlled by the ms-8?*

*I gotta say I am very impressed with the MS-8, I haven't even taken out my mobile pre rta yet or made any adjustments to the EQ and it may sound better than my vette and tundra builds already, Its also my first center channel as well, looking forward to tweaking this to perfection, I may also try and put the mids into the door somehow to widen the stage even more, they wont fit in the stock locations though.*

*I may yank the 6 inch scan revs and replace them with some 8" vifa pl's I have because it seems like a waste using the scans in the car in such a narrow range, plus I wanted to build some home speakers to replace my Celestions which suck, I do have a pair of Senn HD800's and a Meier stage dac and Concerto crossfeed headphone set up to get me by though 🇺🇸*

*God, if my wife knew all the money I have spent on audio over our 16 years together I'd be in deep shit. 😂*

*Thanks for the help Andy, and for making such a cool product.*

*Vin*

1. Before you turn the sub amp down, try tuning a bit with the 31-band EQ. Cut 50-100Hz and see if you like that better.
2. Signal high means too much voltage on te signal input. Signal "noisy" means the signal is severely clipped. MS-8 can't do anything about the signal from your radio, so the answer to the question is "no, but it should be useful to know where your radio clips or where the input of MS-8 clips."
3. No. MS-8 builds the system in a serial process and it has to start at the beginning when you configure the system. While it's a little inconvenient, it doesn't take very long.
4. we have a pair of amps in this series that have crossovers built in and designed to work with MS-8. Check out the MS-A1004.

Quote:

Originally Posted by **quietfly**

[View Post](#)

*that i know of it just has built in wide range electronic xovers . probably similar to the ones in the MS 8 so you can run active 3 way by running choosing 2 way on the ms8 and using the band pass/ hp/lp on the a1004 to further break up your signal.....*

Right.

Sorry guys. Here's the skinny on rear speakers.

Ambient information that's recorded 180 degrees out of phase in L and R is steered to the rear. The discreet information in a DVD is mixed into the 2-channel downmix out of phase. That means, if you play a DVD and choose the 2-channel downmix, it'll play back in full surround.

Live 2-channel recordings where a mic or two is/are used to capture the room will also sound great and believable. Studio recordings where some room synthesis is added to the mix will too. Dry studio recordings without much ambience won't provide much to the rear speakers, so they'll sound like the disc too.

Once the initial delay settings have been captured and implemented in setup, L7 adds 12mS to the sides and 20mS to the rear. This helps to add a sense of space and to further decorrelate the rear signals from the front. When signals steer front, one of the side one of the rear channels are polarity swapped to anchor the front stage. When signals steer rear, the channel is in correct polarity. L7 samples the signal every few milliseconds.

Much of the ambient information is midrange and high frequency. If your side speakers don't include a tweeter, add one and put it in the top of the door panel so they have a direct path to your ear. Low frequencies should be kept out of the sides and rears--remember, the polarity is swapped and that will affect the location of the midbass. Just cross them at 100 Hz or higher and use a steep slope.

L7 does a good job of resolving rear left and right--better than many of the other upmixers, so there is a benefit in having side speakers. Speakers in the rear package tray reflect off the glass at all angles, so they won't provide the best resolution of left and right.

So, my suggestions are:

1. Use at least one pair of speakers in the back.
2. If you can put in four but want to biamp your front speakers using MS-8's crossover, connect sides and rears in parallel. It's very difficult to hear the difference between that and a full 7.1. Is there a benefit? A small one, but depending on where your tweeters are or if you're using midbass drivers and mids in the front, the benefit of the bi-amp is bigger.
3. See note about side speaker tweeters above.
4. Side speakers may help to provide a sense of width, rear speakers will help to provide more depth. Neither will move a hard left or hard right sound outside the car, but both will help to make the car's space seem a little larger WITH SOME RECORDINGS.
5. Logic 7 isn't room synthesis. It doesn't MAKE a room, it helps to resolve on that's on the recording.
6. IF you don't have rear speakers, turn off L7.

---

Quote:

Originally Posted by **t3sn4f2** [View Post](#)  
*Andy, whats the high limit you recommend? 100Hz would make it harder to install a speaker closer to the sides say the d pillar instead of rear deck since the driver would typically have to be larger, have more air space behind it, and be would less efficient.*

I've used 3" drivers crossed as high as 300 HZ and that worked fine.

---

Quote:

Originally Posted by **smellygas**

[View Post](#)

*Right. But I don't think MS-8 has a way to turn off its active crossover when running 4 outputs for a 2-way setup. i.e. you're forced to use the MS-8's active crossover.*

*The MS-8 can certainly not do what a high-end passive crossover can do. An optimized passive crossover will typically have different "cutoff" frequencies for the LP and HP. The slopes aren't always the same (e.g. 2nd order LP, 3rd order HP), and often times they rely on the natural rolloff of a driver to help achieve the final crossover slope so that the drivers sum flat.*

*If you use a manufacturer's optimized passive crossover network, they would probably be optimized with the assumption that the drivers are relatively equidistant. If you suddenly mount the drivers at different distances, this can introduce lobing/cancellation, a bump FR curve, and it's not easily correctable because of the out-of-phase cancellation. So this is why I want to T/A all drivers and use the optimized passive crossovers. I hope that makes sense.*

Well...it almost makes sense. Given any amount of money to develop a speaker set, a passive crossover can be made to perform better than an active crossover, unless that active crossover also includes EQ and time alignment. MS-8 in 2-way on a front set of mids and tweeters will ALWAYS outperform the passive that comes with your car audio components, no ifs ands or buts. If you have enough channels to run 2-way in the front and do whatever else you need to do, then your primary objective should be in getting rid of the passive crossover.

The reason i suggest covering the tweeters for time alignment measurements when you use passives is because it's much more important to align the mids. In the range that those play, we're much more sensitive to phase response (ITD). At high frequencies, we don't hear phase very well, so TA isn't very effective. The transition in our hearing happens around 1k.

If getting great sound is what you're after, there's no drawback to not being able to use bi-ampable passives with MS-8. If experimenting with stuff and making sure you can adhere to everyone's marketing fluff about their products is important to you, then MS-8 probably doesn't offer you enough ability to make erroneous choices in designing a system.

---

Quote:

Originally Posted by **subwoofery**

[View Post](#)

*To be honest, I'm scared of 2 things:*

- first, I don't know how loud you listen to your music and don't know how the MS-8 will react if it sees a level mismatch between your tweets and your mids - boosting the tweet freqs? Maybe but that will add distortion...*
- secondly, I don't know if the internal MS-8 amp will handle the 8 ohm load without hiccups... I know some amps don't like 8 ohm loads (even high-end ones)...*

*Really, I cannot answer and don't want you wasting money on my suggestion.*

*Kelvin*

*PS: did you play with your tweeter's polarity yet? <-- regarding your loss of bass...*

It's very simple. If your tweeters are too inefficient to match your mids, MS-8 will boost the tweeters and cut the mids. The high frequency boost may add system hiss--just like turning up the 10k and the amp gains in a system with a manual EQ

---

In case anyone missed it from another thread, I put together a Youtube video at the request of a few members that explains how to change the backlight color of your MS-8 display.

[https://www.youtube.com/watch?feature=player\\_embedded&v=4c\\_WsoSwMQY](https://www.youtube.com/watch?feature=player_embedded&v=4c_WsoSwMQY)

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Quote:

Originally Posted by **Hooper**

[View Post](#)

*Andy I know you talked about this somewhere in the thread but I can't find it anywhere. Can you explain what the system levels in the audio controls actually do to the system? I am curious if they throw the logic 7 out of sync, if you say, increase or decrease them? Do you follow me? thanks...*

System levels are pretty simple. The fader adjusts the level of the front and rear speakers independently of Logic7. If you fade to the front, the rears are attenuated and if you fade to the rear, the fronts are attenuated.

The center channel level control increases or decreases the level of the center channel.

The subwoofer control increases the bass in all channels below 60Hz but never above 160Hz. The slope of the EQ filter is increased as you increase the level. This is designed to increase the level of the sub bass without making it boomy and to maintain the apparent location of bass sounds by maintaining the acoustic crossover point between the sub and the rest of the speakers (primarily the front).

Auxiliary level increases or decreases the level of the auxiliary input.

---

Quote:

Originally Posted by **Hooper**

[View Post](#)

*Andy is there anything wrong with placing the MS8 volume at 0 db? I do not keep the display hooked up and I use the head unit's volume controls. The manual says if you don't keep the display hooked up then you should place the volume at -6 db. Since I am trying to achieve more headroom would it be okay to run the MS8 volume at 0 db?*

I suggest -6 to leave room in the digital signal for the bass boost and other EQ that's included in the signal. With digital audio, when you run out of bits, you run out of bits. If you set it at 0 and don't hear any distortion when you turn the factory control up, then it's fine.

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*Andy or others,*

*I would like some clarification on the proper procedure for level-matching. Depending on whether the speakers are Hi, Lo, or Sub, what are the frequency ranges to measure? Is the level matching done based on a peak or an average over a certain frequency range?*

*Thanks.*

Well...I've probably set up a hundred MS-8s and have never used an analyzer to level match anything. The only cars that have ever given me problems are ones in which the subwoofer is in a tiny box that creates a huge peak at 70Hz or cars in which the box is in a sealed trunk (like your BMW). In systems where tweeters are driven with separate amp channels, too little gain on the tweeter amp (and too little tweeter output) will cause MS-8 to boost the highs, which can add some hiss to the signal.

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MS-8 uses 50-80Hz and 80-500Hz to level match the sub and the rest of the channels. In the BMW, the under-seat woofers are REALLY efficient between 80-500 and your sub in that little box is attenuated by MANY dB below 50Hz and provides most of its output at about 70--80Hz. The result is big cuts in the midbass for the under-seat woofers. Reduction in the peak in the subwoofer (70-80Hz) and big boost at low frequencies to the sub that it can't easily reproduce. This is one of the few systems that MS-8 can't EQ adequately. I think you've proven that a tiny sealed sub in the trunk of a BMW isn't optimum by moving the sub to the back seat.

Here's something to try: Engage the low pass filter in the amp that drives your sub and adjust it so that you have flatter response from the sub. My guess is that you'll need to set the filter at 60-70Hz. Turn the midbass amp DOWN so the underseat woofers aren't overpowering the rest of the system. Then recalibrate.

---

Originally Posted by **Andy Wehmeyer** [View Post](#)

Guys,  
*My mistake. The display doesn't say to unplug the mic. The manual and quick start guide do, though. In every instance (3) of jet engine noise, the mic was plugged in and the subwoofer sweep seemed to be WAY TOO LOUD. Our verification team is now on this and I expect they'll find the cause soon. We're also working on the bluetooth issue.*

*Regarding the microphones: They are WM61 clones (since Panasonic no longer supplies those mics). The reason that those are so popular is because they are so closely matched without a bunch of additional work. The correction file does correct for an average of several mic capsules, but it also includes correction for the shape and size of the headphone plastic. Using another binaural microphone won't improve the results because the calibration file is designed for our plastic parts. The only difference between the headphone style and an in-ear style would be at very high frequencies. To be absolutely correct, the target curve would then have to be modified to account for that difference.*

*Developing a binaural microphone, a correction filter for it and a target curve that takes all that into account and achieves a desired result is no small feat and has taken months of work in correlating listening tests, measurements with standard microphones and microphone arrays using a dummy head in the car and in a chamber. I'm not inclined to make that work public or to make modification easy, because we won't be able to assure good performance if we do.*

*In all of the emails and PM's Adam and I have received, there's one theme that is consistent--that the target curve is good for the vast majority of people and that the autotune, which is the most important feature, provides great results when a few rules are followed.*

*I can't reiterate often enough that if the sweeps are too loud, the results won't be good. The sub sweep should definitely NOT be loud--no rattling of the trunk or bass you can feel. Just a simple low-volume sweep. If you want more bass than about 9dB above the rest and you have the subwoofer level control maxed in MS-8, then adjust your sub gain AFTER you do acoustic calibration.*

*And for God's sake, please unplug the mic when you're done. **You can use an extension cable if you want to.***

---

Neil, there's nothing inherent in a Mini that makes MS-8 not work. Something else is up. You don't need a center speaker for a center image--in one seat at a time.

---

Quote:

Originally Posted by **duro78** [View Post](#)

*Has anyone been experiencing a terrible turn on/off pop noise on any of the channels?. After swapping out amps one day I started having the pop noise on ch4 ( r-mid). The driver would come fully out as if I hooked a AA battery to it. It also happened when I hit mute. I put a cheapo amp in temporarily so I thought the amp was screwed but when I put two other amps in its place same problem. Tonight I unplugged ch 4 and had no noise at all. So I've figured out the noise is being caused by ch 4 on the ms8. After searching others have just exchanged their units, I haven't seen a remedy. The ch works*



*perfectly fine its just the popping noise. Could it be a a bad sheild idk?*

*Sent from my DROIDX using Tapatalk*

With the unit on, measure DC voltage between the RCA shield and the center of the RCA output. If you measure more than a few mV, then there's DC there and that's causing the pop. If that's the case, try resetting to factory defaults in the system menu and recalibrate. If that doesn't do it, we'll replace the unit.

---

Guys, the KIND of pink noise you use is also important. Stereo pink noise will energize ALL the channels with Logic7 on. Mono pink noise will be steered mostly to the center channel and NOTHING will come from the rears.

If you're trying to check polarity or for a center image, use mono noise with or without a center. If you're trying to adjust frequency response using the 31-band EQ, use stereo pink noise.

The pink noise in Output Diagnostics is sent to combinations of speakers identified as Front Right, Front Left, etc. It is filtered by the crossovers. The pink noise in the secret menu is full range (not filtered by the crossovers) and is sent to individual channels.

Regarding the center image without a center channel: I was recently in Jakarta and listened to a bunch of MS-8s. Some had center speakers and some did not. All had the same center image from one seat.

---

Well Neil...I just checked out your build log. Nice installation. It's uncommon for speakers to be miswired at the factory, but it does happen. I wish I had been at SBN. Maybe we could have straightened the rest of this out.

I can tell you that MS-8 does NOT adjust the polarity of the speakers on its output. It does, however, measure and set delays VERY accurately. In fact, it's far more accurate than a manual MLS measurement, unless you know precisely how to determine the initial impulse of channels that don't include much high frequency content.

The rest of the installation looks great. I read most of the thread, but not all of it. As you know, lots of leakage around the mids will cause problems. I think you indicated that you had solved that--hopefully with something other than polyfill.

If I could make one suggestion--it's probably too late--I'd have suggested a different location for the tweeters. The pods look beautiful, but they have NO baffle. That works fine in a big room where the walls are far from the tweeter. The placement of the tweeter, a few inches away from three different reflecting surfaces, is an open invitation to provide 4 separate apparent sources for frequencies where imaging cues are most prominent. This will definitely make spot-on imaging more difficult. Above 1k, we don't hear ITDs very well, so TA isn't nearly as important as it is in the midrange and midbass. At high frequencies we use level to determine the location of sound. You have at least 4 apparent sources of high frequencies on both sides of the car.

With a manual processor, I suggest setting TA using the tape measure method or with an MLS signal. If you use MLS, don't pay attention to what appears to be the constantly reversing polarity in the measurements. Just look for the initial peak. Don't look for the tallest peak. That will probably be a reflection and will be louder than the initial response due to constructive interference. Be careful when you make these measurements. I suggest a 20uF cap on the tweeter.

If you're using MLS to measure the other speakers, it's helpful to turn off low pass filters. The initial response is NOT the top of the hump you'll see in the sub and the midbass. More high frequency content will help you locate the initial impulse.

---

Quote:

Originally Posted by **Salami**  
Andy,

[View Post](#)

*What would location do you think would be best for this car?*

Top of the door panel. I had a 3-way in the doors of my Mini Cooper and it sounded great. A-pillars should be avoided. I'm probably the only person in the industry who says this, so I'm sure this suggestion is viewed with plenty of skepticism.

Maybe I should give this up and open a pizza shop.

---

Quote:

Originally Posted by **taibani**

[View Post](#)

*Curious for andys response but ive read something that indicated that aiming to the cross side of the car (drivers side towards pax and vice versa) would generally result in more apparent volume balance for both seats where the off axis response of the tweeter is alightly attenuated. I have no idea if this is ever true or if it is, how universal it might be*

Putting tweeters in the a-pillars and firing them directly across the dash is a band-aid for a 2-seat car. The near tweeter is so far off axis that the very high frequencies are attenuated which helps to match the lower level from the far side which is on axis. The result is a better center than if the tweeters were aimed at you, but not as good as in one seat.

If you have a center or are only interested in a 1-seat car, doors or sail panels are MUCH better because they're farther away from the windshield. They can be aimed by turning them toward the rear of the car slightly. Aiming for tweeters only matters at VERY high frequencies.

---

Quote:

Originally Posted by **Shaheenk**

[View Post](#)

Thanks Andy

*Just as an aside, I competed in the first IASCA show for the year in SA today with the MS8 and placed first in my class and 2nd overall. Not bad for a autotune and no real setup time.*

*judge was really impressed. Only 2 comments.*

*Bass was a bit boomy and the horns seem to be changing from sounding very good to ok to very good again. Not sure if this is the centre playing tricks on me or something else.*

*I can sort the sub by closing the port off and seeing if that changes the response. But all in all I am very happy. Also engine noise is only from the centre, thinking its an RCA. The battery is in the rear and we earthing to the chassis.*

If the engine noise is only in the center, turn off Logic7 and see if you hear it in the right and left. If so, look for a ground loop or the source of the noise BEFORE MS-8 rather than between MS-8 and the amp. If the noise is the same in the left and right channels before MS-8, Logic 7 will steer it to the center.

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*Lol and I was just thinking if aiming the tweeters toward the windshield would sound better. I guess I'll leave them where they are. 😊*

*Andy, did the MS-8 "prototype" install in the BMW give you a stage beyond the windshield? If yes how did you do it?*

All of this tweeter aiming is cracking me up. All of the sound from your tweeter below about 10kHz, unless you have a big waveguide, is radiated in all directions. Above 10kHz, the dispersion narrows gradually. That means that you can't "avoid" reflections from the glass by pointing tweeters toward the middle. You can diminish the level of the reflections by moving the tweeter away from them. You can also minimize the effect of destructive interference by mounting the tweeter IN one of the surfaces. This is why I suggest the sail panel. It's farther away from the windshield. It's in the door so the door and door glass become the baffle, sort of. It helps to make the stage as wide as possible. And...it's easy.

Quote:

Originally Posted by **Wenger**

[View Post](#)

*Thanks for your replies.*

*Here is a picture of the door with the two speakers visible:*



This image has been resized. Click this bar to view the full image. The original image is sized %1%2.

2010 Acura TSX Sedan, Premium White Pearl / Parchment

Park Ave Acura – Rochelle Park, NJ



2010 Acura TSX Sedan, Premium White Pearl / Parchment

Park Ave Acura – Rochelle Park, NJ

*I'm not sure if the speakers are close enough together for passives.*

*I guess another possibility if I really wanted the rear doors could be to hook the left rear door and left deck speaker to the same output and the two right backs to the same output. The built in amp probably couldn't power them so I guess then I would need a separate amp.*

*Also, does anyone have speaker recommendations that run well off the built in amp? I'm guessing they would have to have higher sensitivity to work well.*

Yup, use two channels for each of the doors. Connect the rear doors and the rear deck speakers in parallel. I've run everything from factory VW speakers to Boston Pros on the MS-8's amplifier and they all sound fine. It's 20 watts (@4 ohms) and 30 watts at 2. The difference between that and a 60 x 4 amplifier is 3dB.

---

*Question about going active. I'm currently using the passives that came with my comps which are going to the input of the MS8 (using stock HU). I want to go active so I plan to remove the passive crossovers (in doors) and run new wires from the tweeters to the amp.*

*How do you avoid frying things at this point? Since my calibration is set for my previous passive config or if for whatever reason some pop occurs, radio gets bumped on etc.. Or is it as simple as re-wire things up (per above) and just re-run calibration and select 2-way, set hi/mid/low slopes etc..?*

*I know it's suggested to put a cap before the tweeter but that notwithstanding just wanting to ask before I proceed.*

**Andy Replies:**

**After you rewire, turn on MS-8, choose "restore factory defaults" in the system settings menu and then reconfigure the outputs and recalibrate.**

---

Does everyone here finally understand WHY the doors or sail panels work better than the a-pillars? Have we sufficiently killed the bogus myth of tweeters in a-pillars when a center channel and signal steering is used?

---

Just follow the instructions. That will be faster and much easier than posting a question here to which the answer has already been written in the manual. At least half of the answers here will be nonsense or a lambasting because you didn't take the time to read 375 pages of forum posts. Contrary to what must be popular belief, the manuals for many products are useful and actually explain HOW to make the product work. It's now too expensive to write a manual that also explains WHY the product works. That's what this and other forums are for. Sometimes the "WHY" is explained on companies' websites.

Connect MS-8 to the front and sub outputs of the factory amplifier. Make sure that the REM output lead of MS-8 is used to turn on the factory amplifier, if a REM turn on input is included in the harness from the head to the amp. You're not going to have cleaner or better sound by hassling endlessly with connecting to the INPUT of the amp. In many cases, that sounds worse because the output voltage of the factory head is so low. USE THE SPEAKER OUTPUT OF THE FACTORY AMP.

Then, connect MS-8 to the speakers. or to amplifiers that are connected to the speakers. DON'T leave any of the speakers connected to the output of the factory amplifier. Once everything is connected, continue following the instructions. They explain how to set up the unit.

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For the record, MS-8 doesn't distinguish between driver response and reflections. The reflecting surfaces are so close in a car and the arrival time of the direct sound and the reflected sound are so close that it's sufficient to EQ them all at the same time. This is not the case in big rooms and it's why MS-8 DOES EQ at high frequencies and many room EQs do not.

---

There are two things that will cause this distortion every time.

►► All posts are by Andy Wehmeyer unless noted ◄◄

1. If the midrange channels are identified as front high and the tweeter channels are labeled as front low. I know it sounds ridiculous, but I've done it.
2. If the front is identified as 2-way when it's a component system that uses passive crossovers.

There is a third:

3. If the MS-8 volume control is left at -20 for listening and the factory volume control is turned up so loud that either it clips or the input of MS-8 is clipped.

There is a fourth, but it's less common:

4. If the midrange in the front is NOT capable of reaching the tweeter either because the mid is big and way off axis or because it's really a midbass. This may cause MS-8 to boost too much and with the MS-8 volume control near 0dB, there isn't enough digital signal left to accommodate the boost.

When you hear the distortion, please turn DOWN the factory volume control to see if it goes away. If it does, then see if you can get the level you require by turning MS-8's control up. If it doesn't go away, then turn MS-8's volume control down. If the distortion goes away, check the 31-band EQ to see if you've boosted in the midrange.

---

Guys, no need for an 8" in the center channel unless you're going to do a 3-way with a small midrange too. The 8" will NEVER reach the tweeter and tuning will be a nightmare because you'll have a big hole in the off-axis response between the mid and tweeter but not in the reflection off the glass.

Please...do yourselves a favor and heed this advice.

---

Quote:

Originally Posted by **Offroader5**

[View Post](#)

*Ok, so after reading much more in this thread, I'm under the impression this would work well. My 4runner came OEM with a 10 speaker JBL system (hmm, ironic right) which is pretty much non-existent at this point...but it did give me all those locations.*

*My plan was at first to run a 5 channel amp, which would be channels 1 thru 4 to the front door mids/tweets and one channel to a single DVC sub. That would be it in terms of external amps. Then I would use the MS8 to power the midbass in the rear doors and a center channel in the dash. This would use all 8 channels.*

*But, then I thought about using the rear most pillars that housed the OEM surround speakers and also running them off the MS8 directly. This of course would net 10 channels total with the configuration above. I'd be forced to use only 2 channels at the front doors in lieu of the 4.*

*Question is, would it even be worth it to install a rear (top of D-pillar) set of speakers and give up running the preferred 4 channels to the front stage, especially since they are that far back and will only be seeing the lower power from the MS8?*

Connect the D-Pillar speakers in parallel with the side speakers and run MS\_8 as a 5.1, keeping the bi-amp in the front (separate channels for your midbass). This works great. There's a bigger benefit to biamping the front than in discrete rear channels. I promise.

---



►► All posts are by Andy Wehmeyer unless noted ◄◄

Yeah, rear fill in the rear doors is fine. If you'll use a component system in the back, mount the tweeter higher in the door panel. Mine are in the back surface of the B-Pillar. Works great.

---

Guys, The high level inputs are NOT what you enter when you enter the channels. The INPUTS are analyzed automatically by MS-8. When you do "input Setup", MS-8 listens to the signal on the CD to determine which channels are left, which channels are right and which channels are mono. Then it determines whether each channel is a high-pass, full range, band pass or low pass and if there's any time alignment applied in the factory system. It daleys all the channels to match. then, it adds all the rights together, adds all the lefts together, applies a 200Hz low pass filter to mono channels and then adds them into the right and the left. MS-8 starts checking at channel 1, and it's important that it sees a channel that contains high frequencies before it sees a low frequency channel. that's why I suggest the subwoofer output of the factory system should be connected to channels 7 and/or 8.

When you assign channels, you're assigning the OUTPUT channels. MS-8 has no way to figure that out automatically. The setup CD is only for input setup. MS-8 generates the sweep signals for the acoustic calibration.

---

Quote:

Originally Posted by **Fast Hot Rod**

[View Post](#)

*I'm NOT talking about the polarity of the MS-8 outputs, I'm talking about the polarity of the inputs to the MS-8 from the factory Dodge amplifier. A mistake there will not show up when you have your iPod connected, but I'd bet money that it screws with the setup and acoustic calibration. That's why I keep mentioning it over, and over, and over...*

You're welcome. 🙌

Oops. Not correct. MS-8 checks the polarity of the inputs and corrects them. It doesn't do that on the outputs because checking the polarity of tweeters is a crapshoot. MS-8 relies on you to correctly connect the speakers

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*18W is just not enough to get a sub to do what it needs to do, even at low volumes. May I suggest the possibility that you have been listening to a steady dose of distortion since the MS-8 is likely clipping the sub output, which may also cause/contribute to your imaging issues with the subwoofer?*

I've run the under seat subs in BMWs on MS-8's internal amp many times. So long as you don't need high volumes, there's nothing inherently different about driving a sub than a smaller speaker with a constant voltage source (which is what car amps are).

Now, MS-8 attempts to set the sub level about 9 dB higher than the rest of the speakers. That's a LOT of additional power. Kai's suggestion that you may be driving the subs into distortion might be one of the reasons that you hear the bass coming from the sub.

Also, after setup, try cutting 60-120Hz in the 31-Band EQ until thebass moves to the front.

---

Quote:



Originally Posted by **abirvalg**  
Hey, Andy!

[View Post](#)

*So, i finally ended up with the tune i love, but at the cost of some convenience.*

*As you've told me earlier my Acura TL has one of those rare breed HUs that can't down-mix 5.1 for MS-8 to take all the channels, thus the center needs to be skipped. Later you've also suggested to skip the rears. In the end i have fronts and sub plugged into the RCAs. The problem that i'm having is related to the HU yet again. I have to set the volume to 35 on the scale of 40 for MS-8 to accept it as low level input. I think my HU starts to cut bass at around or just under 30, which means i'm well into "weak bass" territory by the time MS-8 gets the voltage it's looking for.*

*Now to the issue itself. If i leave HU at 35 and use the MS-8 remote to control the volume it's all great. But you know how you guys have made your remote symmetrical, probably thinking if someone was blind they won't be driving too far anyway? 😊 Well, steering wheel controls ARE designed for blind people and are much more convenient. But if i crank the MS-8 to -10 and use my HUs volume, i end up in the "full range" zone and the extra bass messes things up making lows and mid-lows all bunched up into a mush.*

*I have tried running without the channel summing and didn't like the outcome. The fronts alone are probably not full range and need the sub to be present.*

*You've mentioned that line drivers aren't needed with MS-8. Could it be that my HU is an exception once again? Or do you have some other tricks up your seemingly bottomless sleeve to allow me to have both the awesome sound and the steering wheel controls? 🇺🇸*

Well...if it were my car, I'd pick up another remote and bury it in the steering wheel somewhere. Then, I'd mod the factory steering wheel buttons as "jumpers" around the volume up and down buttons on the MS-8 remote. Then, I'd set the factory volume control at 35 and never touch it again.

---

Sometimes tuning MS-8 with an active sub can be a little tricky. First, set the crossover on the active sub to the highest possible frequency. Then, it sounds like you'll need to turn the gain up a little bit.

---

Quote:

Originally Posted by **britdavis**  
Thanks, Nathan.

[View Post](#)

*Sounds like I can do it, but I'll just have to be careful.*

*Interestingly, my volume "goes" from 0-50, so I'm just gonna ballpark that my volume will be maxed when I get to 28. 😊 I know that's not how it works -- I may do some basic testing with my RMS DMM to see when I get to 2.8V with different music, and figure that's my max.*

*My HU does have a limit setting, but it states that it is for the internal amp output and not for the preamp outs. Doh!*

No, there's no need to do this. Just hook it up. Once the tuning is done, turn MS-8's volume control down to something like -30 so you can be sure MS-8 isn't running out of power. Turn the head unit up until you hear distortion. When you do, that's the max. My guess is that you'll get really close to the top. Plus, your head unit will only reach max output when the music on the disc is at 0dB (as loud as can be recorded).

This is no big deal. Just plug in and enjoy.

---

Quote:

Originally Posted by **CDT FAN** [View Post](#)

*Thanks for the help. I read that in the manual. It just doesn't seem logical to me that if it adjusts the TA and FR for one position, then it would make the previous positions out of adjustment.*

If you calibrate for the two front seats, you'll have three seating position options in the menu. Driver will be optimized for the driver's seat. Passenger for the passenger seat and Front will be a compromise for both seats. If you have a center channel, the signal steering to the center will make for good imaging in both seats in "Front". If you have no center, then driver and passenger optimization will be good, but not great for the opposite seat. Front will be a frequency response compromise, but not great imaging (unless the speakers are in the kick panels).

---

Quote:

Originally Posted by **rcurley55** [View Post](#)

*I'm posting this back up to see if anyone has an idea: The one thing I can't figure out is how to get a really focused center. I got it with one of my earlier tunes, it sounded everything that should be center was generated by just the center channel. Since then, with every tune the center seems to be smeared or almost as if I have three center images (one in the middle, one 6 inches to the left of center and one 6 inches to the right of center). I tried experimenting with looking at different locations on the side mirrors, but wanted to know if there were any tricks to get the center to be more focused.*

Sometimes if the center channel is pointing up at the windshield and the other speakers are low in the doors or in the kick panels, reversing the polarity of the center helps. This sounds like what's going on in your car (no matter where the left and right speakers are). If you've confirmed that your left and right midrange speakers are connected in the correct polarity, try switching the center and recalibrating.

---

Quote:

Originally Posted by **chevbowtie22** [View Post](#)

*Any thoughts on this Andy? Also should there be a huge concern about what should go into the rear speaker choice? As long as they are a decent set of coaxials I should be fine right?*

Yeah, something decent is sufficient. Don't go overboard. Spend a hundred bucks or less. Small speakers are fine. 3.5" 2-way is enough. Those ought to be 80 bucks or less.

---

Quote:

Originally Posted by **Grendel** [View Post](#)

*Is there a fix for phone calls through the MS8 causing a delay? I really don't want to run another speaker.*

Turn off processing and L7 in the menu and see if that improves the call quality. If it does, the update will help you. If it doesn't, then we'll need to find another work-around. What kind of car?

---

Quote:

Originally Posted by **ousooner2**

[View Post](#)

*Andy, do you know what db one should shoot for when tuning? I'm assuming it puts out at 75db, but figured I'd ask. Just want to get it all level matched and make sure I'm not running it too loud. I'm thinking that's my issue as my stage isn't very good with tunes lately. Very crowded! There's far left...a very slight bit towards the center, center, and then pretty much all far right (playing the 7-drums across the stage from Alan Parsons Soundcheck disc)*

The window for acceptable volume is really big. If you aren't getting a center image, it could be that the first sweeps are too loud, but for them to be too loud, they have to be REALLY loud and for them to be too soft, they have to be almost inaudible.

It could also be one of the front speakers in reverse polarity.

Last but not least, if you're using a 2-way component in the front with a passive crossover with the tweeters and the mids mounted a really different distances from the listening position, MS-8 is time aligning for the tweeters. Cover the tweeters during the first set of sweeps so MS-8 will locate the mids.

---

No need to feed the rear outputs of the factory deck into MS-8.

---

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*If you don't mind having a one seat wonder, I'd say forget about the center at the moment and run the fronts active off the JBL amp. Rears off of MS-8.*

*I'm saying this because you don't have enough amp channels to properly integrate the center. I would not recommend powering it off the MS-8. People always say to do this as it is an easy way to find another amp channel, but the center really needs to get the same amount of power as the door speakers, otherwise it won't work very well (speaking from experience). Also, if the center is smaller and from a different brand, it will be more difficult to get it integrated. Lastly (if you still want to put one in), the center needs a tweeter, so either a widebander or a coax would be required.*

I think I agree with this regarding amps, but not necessarily about the brand of the center channels speaker. That's a routine recommendation for home audio systems where less equalization is required at high frequencies, but MS-8 is going to match the frequency response of the center no matter what you put up there.

Please resist the urge to use a center channel that has no tweeter. This wideband bullshit is just that. Use a tweeter.

---

^^ No, MS-8 uses the level between 50 and 80 Hz to set the level of the sub. If the sub has little output below 50Hz, it'll boost like crazy and cut the midbass. I'm suggesting engaging the amp's low pass filter to flatten the bass a little so MS-8 will set the output levels differently.

---

*a quick question here; what does each of the four sweeps target? I ask because I want to know if frequency response is calculated as a sum of all channels or is each channel optimized individually?*

Individually. The first set of sweeps for each seat set time alignment. The next three are averaged for frequency response correction. Every channel isn't equalized separately. Every location is. Front right gets a set of filters, for example, whether it's a 1-way, 2-way or 3-way. Same for center, front left, side left side right, rear left, rear right and sub.

---

Quote:

Originally Posted by **DuffmasterFresh**

[View Post](#)

*NOISE! OH NO! That's right, I have noise and I am pretty sure it is the MS-8 or Factory Radio. This noise is very noticeable and the only way I can mask it is by turning the volume up. It sounds like static from your TV and at comfortable volume levels it is SUPER noticeable.*

#### **SYMPTOMS:**

- 1) Adjusting the MS8 Volume or the amplifier gain DOES increase or decrease the noise, adjusting the headunit volume does not.
- 2) Unplugging the RCA cables at the amplifier does stop the noise which leads me to believe it is not my amps.
- 3) I did a factory reset of the MS-8 and recalibrated, the noise is still there.
- 4) Pressing mute on the MS-8 removes the noise.
- 5) Switching to AUX on the MS-8 decreases noise to the point where normal listening volume levels don't have easily identifiable noise in them, but once I turn the volume up the noise becomes more noticeable. At this point, using the AUX and my cell phone is a much better option, but not preferred. Once I switch back to the HU, the noise volume doubles.  
\*lowering amp gains and upping ms8 volume to max, there is almost no hiss in AUX mode but a tonne when I switch to the HU
- 6) My MS8 and amps are at the same grounding location, bare shiny metal, rear left tower strut of the vehicle. Should be a great grounding point.
- 7) When I run calibration, I use -20 on the MS-8 because I have a FACTORY headunit.
- 8) I run calibration with my amp gains at the lowest setting.
- 9) Hitting the "Audio Off" on my factory radio does not make the noise go away, the music simply stops. The noise is there regardless of if I am playing a CD, SiriusXM, AUX, or radio.
- 10) The noise is constant and does not change volume, tone, or pitch.
- 11) The noise is still there with processing defeated.
- 12) Lowering the MS8 volume decreases the noise but I have to raise the HU volume to compensate. To get the MS8 noise gone requires my HU volume to be at clipping point, and even then, it isn't very loud so road noise drowns out my music.
- 13) My understanding is that the signal from the factory HU to the factory amp is digital, and thus I cannot pull signal from the factory HU.

#### **SETUP:**

- 1) Factory Navigation Headunit for a 2009 Mitsubishi Lancer GTS. I measured the clipping point to be 40 out of 45 on the volume control. I have the upgraded OEM Rockford Fosgate sound system with amplifier under the driver seat. I get my signal for the MS-8 from the outputs of that factory amplifier.
- 2) Factory 2-way speakers up front. Tweeters in the A-Pillar and 6-1/2 in the bottom of the doors.
- 3) RE-Audio REX woofer in the trunk, 125W.
- 4) 4-Channel LUME amplifier, bi-amping the stock front speakers. Mids on Ch1&2, Tweeters on Ch3&4, X-Overs set to FULL.
- 5) Mono LUME amplifier, 600W, for the sub.
- 6) No center, rear, or side speakers installed.
- 7) Crossovers: Subsonic=30, Sub/Mid=60, Mid/Hi=4000
- 8) I am running signal from all channels of the factory amp to all channels of the MS-8. I know some people say you only need to run front left and right to the MS-8 because it sums the signal, but I wanted to give it everything.
- 9) Connections are currently made with butt connectors... I plan to solder in the future when the system is perfected.
- 10) The MS-8 turns on the amps via the built-in remote turn on output.

*I have been scratching my head at this for a while. My personal conclusion is that the MS-8 is screwed up or the signal from my stock headunit is so crappy that the amps and MS-8 are amplifying the noise of said crappy headunit output. I*

*can't switch out the headunit sadly, no money and it integrates with the car.*

*What can I do about this? The systems sounds so damn good that it is a shame that the noise ruins the experience. Is this "Hiss" only a result of my amp gains maybe and not the HU? With the gain at the lowest point, it sounds fine but then my radio at max volume produces music at normal speaking levels.*

*Should I consider adding a ground to the factory radio or factory amp if it has one?*

The noise is undoubtedly caused by MS-8 boosting the high frequencies in the EQ that flattens the factory signal. In many cases, the rear output of the factory amplifier is out of phase with the front or delayed to create some ambience. This delay or out of phase condition reduces the high frequencies in the sum of the front and rear signals.

DISCONNECT the rear outputs from the input of MS-8 and try again.

Any condition that causes MS-8 to boost the highs will amplify any high frequency noise that's in the system. If the noise is improved when you turn processing off, then the EQ that's boosting is the OUTPUT EQ. IF it doesn't, then it's probably the input EQ. IF the output EQ is causing the problem, then raise the gain on your tweeter amp and recalibrate.

---

MS-8 uses 50-80Hz to set the level of the sub. If you're using a sealed box that has all of its output in that region or a big peak there, it will reduce the level of the sub and then try to boost the lower bass.

You may find that you get the results you want if you use the LPF in the sub amp to reduce the bass in that range. Try a 12dB slope at 50Hz on the MS-A5001 and then recalibrate. If you can't hear the sub sweep, then you've gone overboard on the attenuation. You should hear the sweep, but it shouldn't be so loud that it shakes the mirrors.

---

Quote:

Originally Posted by **Airforceyoooper**

[View Post](#)

*I second that. not to mention the slight differences between looking at the outside of the mirror vs inside of the mirror. All those nuances will alter your outcome.*

No, the head rotation makes very little difference. Changing crossover frequencies can make a big difference, especially if one choice is in a null and the other is in a peak.

---

Quote:

Originally Posted by **DuffmasterFresh**

[View Post](#)

*I replaced all of the power and ground wire and started soldering all of my wire connections. So far, no reduction of hissing. I am starting to think that it's either the factory signal or the MS8 is defective. My two amps and the MS8 all ground to a distribution block which then grounds to the frame of the car by a 4 inch long ground cable.*

*When I was using the MS8 without amplifiers it was whisper quiet. I can't believe that having amplifiers added to the system at zero gain would amplify the noise so much as to be heard at average listening levels when a song dips in loudness.*

*Should I add a ground loop isolator? I really don't want to add one if I can fix this, I consider them to be band aids. Should I add 20uF capacitors to my tweeters, would that help? Right now they simply connect right to my amp.*

there could be two reasons for this:

1. your head unit includes some cut at high frequencies that MS-8 is boosting in the input EQ. Try plugging something into

2. Your tweeters aren't loud enough without a bunch of EQ at high frequencies. Turn off processing in MS-8's menu to check. If you hear a bunch of hiss with something plugged into the aux in and with processing defeated, then it isn't just the EQ boosting because you have no highs somewhere.

**By Kaigoss69**

*HOLY CRAP!!!* 🤯

*So I've had a major breakthrough today with the subwoofer. This time, I cannot take any credit whatsoever. I used a "trick", but it was Andy who suggested it:*

*Quote:*

*Originally Posted by **Andy Wehmeyer***

[View Post](#)

*Instead of connecting the 5001 to the output of the 1004, why not connect it to the MS8? Then, identify the subs as front low. If you do that, MS-8 will time align them and set the level in a different way.*

*For the past year I've run a 2-way front plus sub, and I thought the results were pretty damn good. It was the best the car had ever sounded. I put in an IDMax 15 IB and a new amp and it really helped to clean up the sub stage and get me some great volume when I needed it. Most times though when listening to normal music it would just blend very nicely and only come on strong when called upon.*

*Last night, I re-read Andy's post above, and since I was in the process of cleaning up the wiring in my trunk, I decided to go ahead and try this. I connected outputs 5 and 6 to the sub amp L & R inputs, and set the MS-8 up for a 3-way front stage, without sub (instead of the traditional 2-way configuration, plus sub). My underseat woofers became FLMid and FRMid (instead of FLLo and FRLo), and FLLo and FRLo became the new outputs to the sub amp (I crossed over at 50Hz 24dB/oct). Ran calibration and put in some tunes. At first, I thought I had screwed something up because I could not hear the sub play whatsoever. I stuck my head between the seats, facing the trunk, and still nothing. It sounded really really good though, loud and clean, but all the bass seemed to be coming from my 10" Morels under the seats. I went to the trunk to turn up the sub amp gain but first I decided to reach through the basket and put my fingers on the back of the cone of the IDMax... Well, slap my ass and call me Sally! 😊 The damn sub was playing, hard!*

*This is unbelievable, for the first time ever the sub has totally disappeared. I am utterly amazed. Had to come up here to report, now back to the car for more listening! Thanks a bunch Andy!*

[illegible]

*Quote:*

Originally Posted by **sirb00m**

[View Post](#)

*I'm confused. Were you guys not connecting the subwoofer amplifier to open channels on the MS8? It says right in the manual that every single speaker must be downstream from the MS8 and it's common practice to use channels 7 and 8 for your subwoofer amplifier. A subwoofer amplifier should not be daisy chained from some other amplifier or bypass the MS-8, otherwise it will not time align the subwoofers individually from the speakers.*

*Hopefully that is not what was happening and I just read wrong.*

*You did read some things right, and others wrong.* 😊





*How high you running your sub? Stereo information in most music isn't prevalent until 200ish Hz on a lot of it, at least from what I've noticed while playing with the idea mono midbasses and asking others who have tried it. Anyways I'm not sure on the summing thing. I know my Arc 2500xxk only used the right RCA when you ran it in bridged. Which sucked because I needed to get one more part lol.*

This used to be the case with vinyl records. Lots of low frequency information is now stereo.

Quote:

Originally Posted by **kaigoss69**

[View Post](#)

*Andy, I have never doubted anything you said...*

*BUT... I really tried over the years to get the sub properly integrated. You know, I used many workarounds, playing with gains before and after calibration, putting the subwoofer in the back seat for calibration, reversing polarities, and of course tweaking the EQ to get a better transition between midbass and subwoofer. I'm not exaggerating when I say I have re-calibrated hundreds of times over the years and I spent hundreds of hours in the car trying to get it to where it was two days ago. If it had only been a level issue, then why did I never come close to what I have now? I read about experiences of other users with different processors, and how they were able to "get the sub to play on the hood" with the help of T/A. Even when my system sounded really good, and I had tweaked everything I possibly could, the sub was never up front.*

*This is a game changer. We are not even talking about the same ballpark, it is a totally different dimension of bass - seamlessly integrated, absolutely transparent, and everything is happening up front, and in front of me. I am running out of words to describe how much better it sounds now. Hell, even the rattles have disappeared! 😊*

*Are you 100% sure it is just due to level setting?*

Yes. It has nothing to do with time alignment. The level setting for the subwoofer is VERY complicated and in retrospect, I would do it a different way because it's too dependent on the shape of the sub's response. When you assign the sub as front low or mix it in with the fronts using your method, then the level of the subwoofer and the shape of the response is set entirely with the EQ rather than a level match to +9dB above the mids and highs.

The problem is that if the bass from 50-80 Hz isn't at a similar level as the bass higher or lower, then the EQ may not be able to fix it. For systems and cars in which the bass is relatively flat from 20-120Hz, it works fine.

Bass and midbass in BMWs is especially tough because those 8" under the seats make an assload of midbass, which MS-8 attenuates in the Mid/High EQ when they are identified as front low. When the sub, especially a small sealed box, is placed in the trunk, it's a really narrow bandwidth response and the combination is death for the algorithm.

If the 8s under the seats are used as the subwoofers, then it works GREAT.

By **Kaigoss69**:

Quote:

Originally Posted by **CruelSun**

[View Post](#)

*OK, so now that I am finally current in this thread, I have one concern.*

*I am planning a system in my 2012 Honda CR-v.*

OEM HU --> MS-8

**center:** none (at least for now)

**front:** 6.5" components (Polk 6501?) in stock locations (Mid - low in door, tweet in sail) {Active} {Powered by 4x 75-100Watt JL Audio amp}

**Rear doors:** OEM, or decent quality coax {powered by MS-8}

**Sub:** [JL Audio CR-V Stealthbox](#) {powered by 300-400 watt JL Audio Amp}

I will be applying sound dampening.

**My concern is this:** Would the Stealthbox be considered "a peaky sub in a small sealed box"?? Surely it is a quality driver and enclosure, I'm just trying to learn from this thread and avoid the pitfalls.

Do a front 3-way with rears (sides).

CH1: FL-Hi: Tweet

CH2: FR-Hi: Tweet

CH3: FL-Mid: Midrange

CH4: FR-Mid: Midrange

CH5: FL-Lo: Sub (L input)

CH6: FR-Lo: Sub (R input)

CH7: SL

CH8: SR

Go through set-up and assign as above. Calibrate (don't worry about results right now). After calibration, set MS-8 vol to -30 (or lower) and go to the hidden menu, and go to "output identification". Measure SPL in head location of CH7 & 8 which are driven by MS-8 onboard amp. Then match channels 1-6 to 7&8 as best as you can. Then exit menu and let MS-8 shut down and reboot. Recalibrate. Done. Enjoy! 😊

Oh, and don't forget to unplug the mic after you finish calibrations and BEFORE you select "done". Don't ask why, just do it and never forget!!!

---

**By Kaigoss69:**

*Look guys, the absolute values for MS-8 calibration volume and amp gains mean nothing. In the end you need to make sure that*

- 1. The sweeps are at conversation volume*
- 2. The sweeps between tweeter and midrange channels are all about the same volume (within 2-3 db)*
- 3. The sweeps of dedicated midbass channels can be increased about 4-5 dB (I think this helps)*
- 4. The sweeps of the subwoofer are very low volume (hear, but don't feel).*
- 5. Use each speaker only in its usable frequency range (be conservative!).*

*The subwoofer sweeps are actually the most complicated part of the equation. It takes some experimentation to get it right. Sometimes though, no matter what you do the subwoofer does not get integrated correctly (either too boomy or the midbass sucks). Then it helps to set the system up such that the subs are assigned as front lows.*

*The amp gains can be set with the MS-8 hidden menu through "output identification" where it plays pink noise through each channel separately. This is the best way to level match all the channels. For me, I set the MS-8 volume at -25, then shoot for around 75dB volume out of the mids and tweeters, measured at the driver head position. I set the midbass at 80, and the sub at 84. This works for me but your circumstances may be different.*

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End of record – above post is #10165 on thread page 407; 10/26/14

<http://www.diymobileaudio.com/forum/2186269-post10165.html>