

a/d/s/

analog and digital systems inc.,

BMW E34

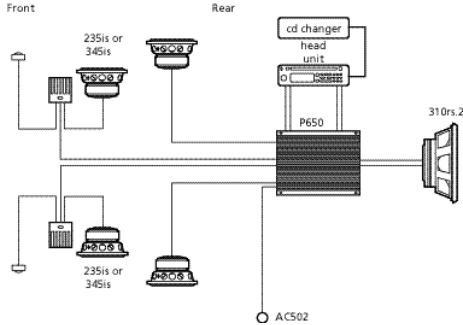
1989-95 5-series

Audio System Upgrades

BMW E34

audio system upgrades, 1989-95 5-series

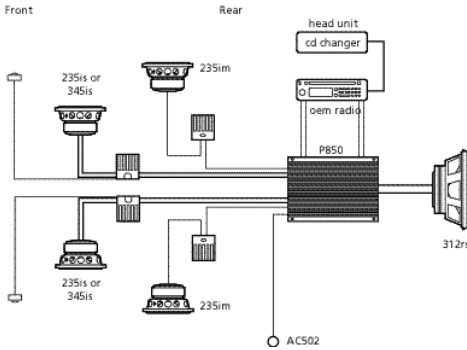
UPGRADE I. In this upgrade we address the inadequacies of the factory bass system and underpowered factory amp. Stock systems are not equipped with subwoofers. Therefore, the best first investment is to add one to the existing system.



To add a subwoofer to the factory system we need an amplifier to power it. We have a several choices here, depending on budget. The least expensive alternative would be to use a single 310rs.2 along with a P450 amplifier. Powering the new subwoofer with any a/d/s/ P-series amplifier will allow use of the optional AC502 bass level controller for up-front bass level adjustment.

The next step would be to replace the under performing front speaker system with the 235is set which would be mounted in stock front locations. As in most BMW models, factory speaker positions are determined by stylists, not acousticians. As such, we recommend upgrading the 3-way stock system with a 2-way system.

UPGRADE II. For this upgrade, we will use the same front speaker setup as in stage I.

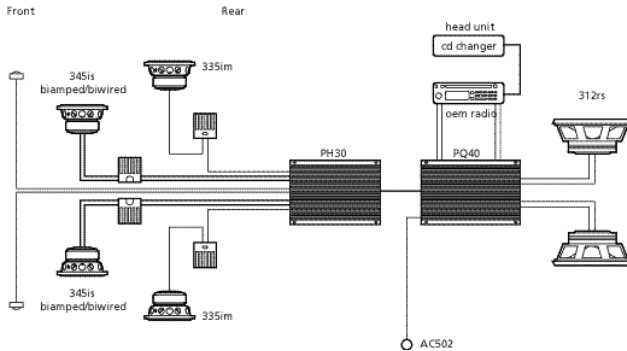


To this we will add a pair of a/d/s/ 235im coaxial speakers for rear fill and a single a/d/s/ 312rs subwoofer in a custom 1.25 cu.ft. box in the trunk. The custom box offers better driver control for the woofer along with higher playing level. It will be installed in such a manner that it "fires" through the ski sack.

Power for upgrade II will come in the form of an a/d/s/ P850 amp and will be distributed as follows:

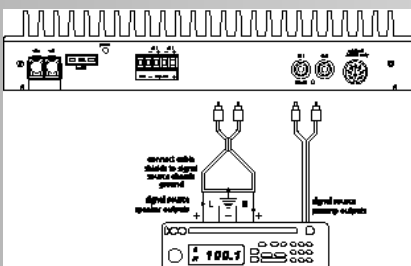
- 50 watts to each front speaker set
- 50 watts to each rear speaker set
- 80 watts to each voice-coil of the 312rs from channels 5/6 and 7/8

UPGRADE III. This upgrade should satisfy even the most ardent audiophile; someone who likes to listen to his or her music at concert levels, yet crystal clear.



We'll use the upgraded high performance 345is front speakers but this time we won't use the passive crossovers supplied with the set. Instead we'll actively filter our front speakers with the electronic crossovers on board our amplifier. Our rear speaker choice will also be upgraded to the 3-series 335im. The biggest difference in upgrade III is the addition of much more power, and another subwoofer.

Subwoofers will be a pair of a/d/s/ 312rs, dual voice coil woofers, in a custom enclosure of 2.5 cu.f.t. volume in the front of the trunk sealed to our front trunk wall.



Correct speaker level wiring diagram for interfacing with factory head units.

Use positive (+) and negative (-) speaker wires. Connect "+" speaker wires to RCA center pin conductors. Connect "-" speaker wires to RCA shield. Repeat for 4 channel system.

This approach allows a far less complex and better controlled dispersion pattern when implemented with the trademark 2.5KHz. crossover employed only by a/d/s/ speaker systems.

If we choose to upgrade front speakers in this stage, we would use a P650 amp to power front and rear speakers and also the subwoofer. The on board electronic crossovers on this amp would be employed, adding to the efficiency of the system and improving the maximum playing level dramatically.

Crossover frequency for the sub would be 70-80 Hz. With the 335is set, use an 80-100Hz high pass. It should be noted that with most BMW models, speaker upgrades require an amplifier upgrade in order to maximize system performance.

Equipment		
235is	\$ 350.00/pr.	} Choose one
345is	\$ 600.00/pr.	
P450 amp	\$ 500.00/ea.	
P650 amp	\$ 650.00/ea.	
310rs.2	\$ 250.00/ea.	
AC502	\$90.00/ea.	

As in upgrade I, subwoofer level will be controlled from the dash by means of the a/d/s/ AC502 remote subwoofer level control.

With this system, we'll be able to hear and feel the music at virtually any speed..

Equipment		
235is	\$ 350.00/pr.	} Choose one
345is	\$ 600.00/pr.	
235im	\$ 280.00/pr.	
P850 amp	\$ 850.00/ea.	
310rs.2	\$ 250.00/ea.	
AC502	\$ 90.00/ea.	

We'll use an a/d/s/ PH30 amp to power all our satellite speakers with power breakdown like this:

- Front tweeters 75 watts each from channels 1/2
- Front mids 75 watts each from channels 3/4
- Rear speakers 75 watts each from channels 5/6

To power our subwoofers we'll use a real power house; the a/d/s/ PQ40. Since we're using 312rs.2 dual voice coil woofers, we'll supply each voice coil with 100 watts for a total of 400 watts on bass. This will be controlled by our dash-mounted AC502 remote subwoofer level control. This system should satisfy just about anyone who likes the ability to listen to their music at performance level at any speed!!

Equipment		
345is set	\$ 600.00/pr.	
335im set	\$ 400.00/pr.	
2) 312rs.2 subwoofers	\$ 600.00/pr.	
PH30 amp	\$ 1200.00/ea.	
PQ40 amp	\$ 1000.00/ea.	
AC502 subwoofer level control	\$ 90.00	



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made in the USA

BMW E34 5-series 1989-1995 factory wiring color code:

<u>signal from radio</u>	<u>1989-92, 1994-95</u>		<u>1993</u>	
	<u>color</u>	<u>connector/pin #</u>	<u>color</u>	<u>connector/pin</u>
front left +	yellow/red	26pin/16	yellow/red	12 pin/11
front left -	yellow/brown	26pin/17	grey	12 pin/10
front right +	blue/red	26pin/15	blue/red	12 pin/6
front right -	blue/brown	26pin/14	blue	12 pin/4
rear left +	yellow/blue	26pin/3	yellow/black	12 pin/12
rear left -	yellow/grey	26pin/4	grey	12 pin/10
rear right +	blue/violet	26pin/2	blue/black	12 pin/5
rear right -	blue/grey	26pin/1	blue	12 pin/4
remote turn-on	white	12 pin/2	white	12 pin/2

<u>amplifier output wiring</u>	<u>1989-92, 1994-95</u>		<u>1993</u>	
	<u>color</u>	<u>connector/pin#</u>	<u>color</u>	<u>connector/pin #</u>
front left tweeter +	yellow/green	26 pin/21	yellow/green	12 pin w/11 wires/1
front left tweeter -	yellow/brown	26 pin/22	yellow/brown*	full 12 pin/2
front right tweeter +	blue/green	26 pin/23	blue/green	12 pin w/11 wires/8
front right tweeter -	blue/brown	26 pin/ 24	blue/brown*	12 pin w/11 wires/5
front left mid +	yellow/white	26 pin/25	yellow/white	full 12 pin/7
front left mid -	yellow/brown	26 pin/26	yellow/brown*	full 12 pin/2
front right mid +	blue/white	26 pin/8	blue/white	12 pin w/11 wires/6
front right mid -	blue/brown	26 pin/9	blue/brown*	12 pin w/11 wires/5
front left woofer +	yellow/red	12 pin/7	yellow/red	full 12 pin/1
front left woofer -	yellow/brown	12 pin/8	yellow/brown*	full 12 pin/2
front right woofer +	blue/red	12 pin/9	blue/red	12 pin w/11 wires/12
front right woofer -	blue/brown	12 pin/10	blue/brown*	12 pin w/11 wires/5
rear left tweeter +	yellow/black	26 pin/10	yellow/black	12 pin w/11 wires/7
rear left tweeter -	yellow/grey	26 pin/11	yellow/grey*	full 12 pin/3
rear left woofer +	yellow/violet	12 pin/11	yellow/violet	full 12 pin/8
rear left woofer -	yellow/grey	12 pin 12	yellow/grey*	full 12 pin/3
rear right tweeter +	blue/black	26 pin/12	blue/black	12 pin w/11 wires/9
rear right tweeter -	blue/grey	26 pin/13	blue/grey*	12 pin w/11 wires/10
rear right woofer +	blue/violet	12 pin/5	blue/violet	12 pin w/11 wires/11
rear right woofer -	blue/grey	12 pin/6	blue/grey*	12 pin w/11 wires/10
+12V constant power	red/white	12 pin/1	red/white	12 pin w/11 wires/2
ground	brown	12 pin/3,4	brown	12 pin w/11 wires/3

*wires marked with an asterisk are common with other like-colored wires in 1993 vehicles. Unwrap the wiring harness approx. 18" back from the OEM connector to break this common.



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