

Premium surround sound systems from Harman Kardon® in the BMW 1 Series and BMW 3 Series

KARLSBAD, GERMANY – June 30, 2010 – **HARMAN, the premium global audio and infotainment group, is pleased to announce that its Harman Kardon® Premium sound systems now provide a fascinating all seat surround sound experience in the new model year eleven BMW 1 and 3 Series. The company's brilliant Logic 7® surround sound system of Harman Kardon® produces crystal-clear treble, a powerful bass and an authentic three-dimensional sound experience. The acoustic experts from the Harman Automotive Division have been working together with BMW since 1993.**

During the early design phase, long before the prototype for a new vehicle model is available, the acoustic experts from Harman Automotive began developing the new Harman Kardon system architecture using a virtual model to determine the precise loudspeakers, amplifier and their precise placement inside each model variant.

Acoustic conditions in the two BMW 1 Series models (Coupé and Convertible) and the four BMW 3 Series models (Sedan, Coupe, Convertible and Sports Wagon) couldn't be more different. That's why the speakers have not just been placed in different positions, but also different speaker types have been used depending on the model and body form.

Harman Kardon's Logic7 technology is the basis for the three-dimensional sound experience providing acoustic integrity and balanced performance. The output of the DSP multi-channel amplifier was tailored by the Harman Acoustic Engineers using the new AuraVox® equalizing system. After all, BMW sedans, sport wagons, coupes, and convertibles have dramatically different acoustic conditions.

The Harman-developed AuraVox software and 24 microphones are used in the acoustic tuning of each system, enabling precise measurement and evaluation of acoustic characteristics and performance conditions given unique interiors, loudspeakers, windows and cladding panels. AuraVox uses the extensive measurements to create the appropriate filter for each speaker, correcting signal run-time differences from the various loudspeaker systems to the listener and regulating the volume levels and frequency response patterns of the individual channels. This tuning process is computer-aided. The final process of fine-tuning is performed by trained Harman sound specialists to ensure the overall integrity of each system.

The digital signal processor (DSP) of the surround amplifier uses its high computational power to control the frequency responses for all speakers separately according to the values determined, ensuring a well-balanced sound. The result is a perfect spatial listening experience from every seat. The output of the Harman Kardon DSP amplifier depends on the relevant BMW model: 300 watts in all BMW 1 Series models, 340 watts in the BMW 3 Series Convertible, and 420 watts in the BMW 3 Series Sedan, Coupe and Sports Wagon guarantee optimal reproduction of music at any speed or road condition.

Harman Acoustic Specialists developed distinct system architectures for all BMW model variants. This includes ten high performance loudspeakers in the BMW 1 Series which include two integrated subwoofers under the front seats delivering low frequency bass impact, while four metal matrix tweeters and four metal matrix mid-range speakers complete the mid and high frequency sound spectrum. The BMW 3 Series Sedan, Coupe, and Sports Wagon models have a total of 13 loudspeakers: two integrated subwoofers, four metal matrix tweeters, seven metal matrix mid-range speakers, two of which are located in the rear of Sedan and Coupe, while the Sports Wagon has two integrated EDPL mid-range speakers (EDPL = electro-dynamic planar loudspeaker) in rear headliner. The EDPL loudspeakers are characterized by high dynamism, little distortion and a lightweight design. The most remarkable feature of the extremely low-profile sound transducers is their unique control over the spatial sound. Because of the different body structure, the BMW 3 Series Convertible has two integrated subwoofers, four metal matrix tweeters and five metal matrix mid-range speakers.

Benefits at a glance

- **Tailor-made.** Every detail of the overall system is specially designed for the relevant BMW model and precisely tailored to the interior for maximum performance.
- **Powerful.** A total output of 300 watts (BMW 1 Series), 340 watts (BMW 3 Series Convertible) and 420 watts (BMW 3 Series Sedan, Touring and Convertible) maximize the fun factor.
- **Dynamic and balanced.** 10 (BMW 1 Series), 11 (BMW 3 Series Convertible) and 13 (BMW 3 Series Sedan, Sports Wagon, and Coupe) high-performance speakers deliver precise dynamics and excellent sound balance
- **Authentic.** Innovative technologies produce a convincingly realistic music experience – as atmospheric and rich in detail as a live performance.
- **Optimized acoustic performance.** Optimally positioned speakers and the performance impact of automatic “Auravox” equalizing system deliver a superlative multi-seat musical experience.
- **Highly efficient.** Pioneering technology and materials guarantee high efficiency, quality and performance with low spatial requirements and weight.

General information

HARMAN (www.harman.com) designs, manufactures and markets a wide range of audio and infotainment solutions for the automotive, consumer and professional markets – supported by 15 leading brands including AKG®, Harman Kardon®, Infinity®, JBL®, Lexicon® and Mark Levinson®. The Company is admired by audiophiles across multiple generations and supports leading professional entertainers and the venues where they perform. More than 20 million automobiles on the road today are equipped with HARMAN audio and infotainment systems. HARMAN has a workforce of about 11,000 people across Americas, Europe and Asia, and reported sales of 3.2 billion for the last twelve months ended March 31, 2010. The Company’s shares are traded on the New York Stock Exchange under the symbol NYSE: HAR.

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