

B&W 600 SERIES

B&W
LOUDSPEAKERS



USER
MANUAL

BEDIENUNGSANLEITUNG

GEBRUIKSAANWIJZING

MANUEL
D'UTILISATION

MANUALE DI
ISTRUZIONI

MANUAL DEL
USUARIO

DM620



DM630



DM640



INTRODUCTION

The 600 Series of digital monitor loudspeakers has been developed from B&W's highly successful 500 Series and incorporates many new features to give you, the user, improved performance.

B&W maintains one of the finest acoustic research and development facilities anywhere in the world. Many years of experience in designing loudspeakers for a variety of applications, from the home to the recording studio, from in-wall to in-car, has been applied to give you the best quality sound for all applications.

Extensive use is made of computer aided design throughout the development programme, including Finite Element Analysis – a technique to predict diaphragm behaviour – and Laser Interferometry – used to measure actual vibrations of both diaphragms and cabinets. In addition, B&W has access to some of the most sensitive measuring devices available – the ears of the experts – both musicians and others within the recording industry who know their music.

All the systems in the B&W 600 Series have been designed with digitally recorded music in mind. Satisfying the extra demands of digital recording – that the loudspeakers should be able to reproduce the finest detail over a wider dynamic range – also benefits the reproduction of analogue recordings.

The aim of this manual is to increase your knowledge of the speakers and, in doing so, give you greater enjoyment from their use. Because any high quality loudspeaker is dependent both on the signals fed to it and the environment in which it is used, we have devoted sections to each of these subjects.

B&W loudspeakers are distributed to more than 50 countries worldwide and we maintain an international network of carefully chosen distributors who aim to give you, the customer, the widest possible service. If at any time you should have any problem which your dealer cannot resolve, our distributors will be more than willing to assist you.

DESIGN BACKGROUND

The B&W 600 Series comprises three systems which vary in size and therefore in their ability to reproduce the lowest frequencies. Power handling also increases as you move up the range, allowing greater maximum output levels. There are, however, several common features.

The enclosures

B&W's expertise in cabinet technology following the introduction of the Matrix Series, coupled with advanced laser measurements, allows the optimisation of the cabinet construction to reduce unwanted vibrations within the structure. All the 600 Series cabinets are manufactured from high density particle board and internally braced. In addition, the use of structural plastic baffles on top of the wooden baffles further strengthens the cabinets.

The crossover networks

Sophisticated computer technology at the design stage has enabled B&W to optimise each component in the crossover networks. Computer testing during production ensures that this optimised performance is maintained to close tolerances on each sample.

The drive units

High-frequency

The same high-frequency unit is common to all three systems. It uses a metal dome diaphragm to provide resonance-free piston motion within the audioband, and magnetic fluid cooling of the voice coil to increase power handling and reduce compression (the dulling of the sound at high levels when heating of the voice coil reduces the sensitivity of the unit).

Midrange/low-frequency

DM620 A single new 200mm (8in) midrange/low-frequency unit with a reinforced polypropylene diaphragm is used. The 31mm (1.2in) voice coil is wound on a Kapton former with high-temperature epoxy adhesives to ensure high power handling. The unit is coupled to a 200mm (8in) passive radiator with long-throw capability to reinforce the lowest octaves.

DM630 Two identical drive units of similar specification to that used in the DM620 are employed in a ported reflex enclosure. The use of two low-frequency units reduces the excursion required to reproduce the lowest frequencies, leading to lower distortion. Power handling is also increased. The lower unit is progressively rolled off above 400Hz to maintain good vertical dispersion at mid-frequencies.

wired in parallel, crossing over to a separate midrange unit at 300Hz. This 160mm (6.5in) driver uses a sophisticated woven Kevlar diaphragm with a critical damping layer to give the highest quality in this most critical frequency range.

UNPACKING, INSTALLATION, ELECTRICAL CONNECTION AND AFTERCARE

Unpacking

We suggest that, after unpacking your loudspeakers, you should retain the packing in case it is necessary to transport them at a later date. The cartons contain:

- (a) One B&W DM620/630/640 loudspeaker.
 - (b) One accessory pack containing one alternative port and one blanking-off plate (except DM620).
- And in one carton only:
- (c) One copy of this user manual.

Installation

B&W 600 Series loudspeaker systems are designed to be floor standing. The best balance of sound is achieved when the listeners' ears are within $\pm 5^\circ$ of the reference axis in the vertical plane (see specifications for the definition of reference axis). This equates to a vertical distance of $\pm 260\text{mm}$ (10.3in) at a typical listening distance of 3m (10ft). If it is necessary to raise the system from the floor, your dealer will be able to advise you on suitable rigid stands.

DM630 and DM640 are supplied with a choice of two different length ports and a blanking-off plate which enable you to tailor the bass response of the systems (see listening room section). They are supplied with the longer of the two bayonet-fixed ports fitted into the rear of the enclosure. The level of bass may be increased by replacing this with the shorter port, or reduced by fitting the blanking-off plate.

Electrical connection

All connections should be made with the amplifier switched off. Each speaker is provided with two pairs of gold-plated terminals at the rear of the cabinet. The lower pair connects the low-frequency units and the upper pair the high-frequency units (midrange and high-frequency units in the case of DM640). The two

to the power amplifier. The positive (+/red) terminal of the amplifier should be connected to a positive terminal on the loudspeaker (marked '+' with a red band). The terminals will accept bare wires or 4mm (0.16in) banana plugs.

With good quality ancillary equipment, the reproduction of low-level detail can be improved by bi-wiring your loudspeakers (separate cables from a common power amplifier output to each pair of terminals), which reduces interaction between the separate sections of the crossover. A further refinement is bi-amplification (each unit fed from a separate power amplifier). In both cases the terminal links should be removed after removing the lower terminal caps and loosening the upper ones.

It is important to observe the correct polarity when connecting a stereo pair of loudspeakers. Wrong connections to one channel can result in a loss of bass and an inability to focus a correct stereo image. Reversal of the polarity to one loudspeaker will restore the situation.

It is good practice to keep the connecting leads between power amplifier and the loudspeakers as short as possible. Use heavy gauge wire to keep the DC resistance to a minimum, preferably below 0.2Ω (out and back). Excessive inductance in the cable can lead to a lowering of extreme high frequencies, whilst excessive capacitance can cause instability in certain power amplifiers. Your dealer will advise you on the most suitable cable for your needs.

Aftercare

The cabinet should be treated as any normal piece of furniture. If you use an aerosol cleaner, spray onto a cloth and keep it away from the front of the loudspeakers, especially the grille cloth and drive units. If you need to clean the grille, first remove the frame by grasping the outer edges near the corners and gently pulling away from the cabinet. The material may then be brushed with a normal clothes brush or similar. Please avoid touching the drive units, especially the high-frequency unit, as damage could result.

AMPLIFIER, CONTROL UNIT AND SOURCE EQUIPMENT

The power amplifier

The recommended limits of power output for the driving amplifier are given in the specification. However, in giving these limits it should also be stated that amplifier power output requirement is an almost impossible figure for the loudspeaker manufacturer to specify. It will depend entirely upon the type of music reproduced, size of listening room and sound level required. It is always better to have an amplifier with high power output, as this allows the proper reproduction of transients; whereas if the amplifier output is too low, clipping can occur during high peak level transients. Apart from causing audible distortion, clipping results in a relative increase in the power fed to the high-frequency unit, with the possibility of thermal damage.

The control unit

The control unit – although it deals with small voltages rather than large currents as in the case of the power amplifier – is an equally critical part of your listening chain. Choose with care, in the knowledge that the ultimate test for audio components is critical listening. At B&W's research department there are many different combinations of control units, amplifiers and source components such as analogue/CD players, tuners, etc. It is our experience that each unit (to say nothing of the interconnecting cable) is a variable, and the final listen-

CD player, analogue turntable and tuner

The comments in the previous paragraph apply equally to these items of equipment. CD players have now been on the market for some years and already considerable advances have been made. In its present state of development the CD player, when coupled with the best recordings made on this medium, can provide the most exceptional source material, totally worthy of the finest equipment with which it is associated.

THE LISTENING ROOM AND POSITIONING YOUR LOUDSPEAKERS

The degree of accuracy with which the original musical performance can be reproduced in your own home depends on a number of factors, including the quality of the original recording, the equipment used for reproduction and the acoustic properties of your listening room. Regardless of other links in the chain, the listening room will to a greater or lesser degree imprint its character on the reproduced sound you hear. In simple proof of this statement, notice how the sound of the human voice changes according to environment.

Choice of listening room

Few people are fortunate enough to have a choice of listening rooms; but for those to whom this is possible (or anyone choosing a new home) the following may be helpful guidelines:

- (a) Any room with different dimensions for ceiling height, length and width will sound more even in response than rooms where all the dimensions are similar.

- (b) Solid walls are preferable and will show better reproduction of low frequency transients than some modern constructions where the inner walls are of plasterboard and slightly flexible.
- (c) Other than in houses with solid or concrete floor structures, a ground floor room is preferable to an upper floor.

Changing listening room acoustics

Quite small changes in the furnishing of a room can change its acoustic properties quite significantly. If you already have pictures on the wall, remove these experimentally and at once you will notice a considerable change in the sound from your loudspeakers! We are not suggesting that you should leave the room bare of pictures — quite the reverse, because pictures break up the otherwise plain wall surfaces and generally give fewer discrete high-frequency resonances or flutter echoes. Curtains are another element which can change the sound of your listening room in the mid/upper frequencies. Heavier curtains give more sound absorption of these frequencies and a softer, less reverberant quality to the upper octaves. Conversely if your room sounds too dead, thinner curtains will give more life or sparkle in these frequency regions. So far as sound in the low frequencies is concerned, this is largely controlled by the dimensions and construction of the room. However, large items of furniture do change room behaviour at low frequencies, and their placement may be worth experimenting with.

Placement of your loudspeakers

It was once said that correct placement of a cheap pair of loudspeakers could produce better sound than incorrect placement of a much more expensive product. Whilst this is somewhat of an exaggeration, it is still true

that changing the position of your loudspeakers will have a greater influence on the sound than any other variable under your control.

The spacing between your loudspeakers will depend on the size of your listening room and the distance of your seating from the loudspeakers. As a general rule they should not be closer than 1.5m (5ft) and the space between them should not exceed the distance of your seating for listening. Placement of the two loudspeakers and the listener on the points of an equilateral triangle is not a bad rule to follow.

The position of the loudspeakers in relation to the walls of the listening room can have a noticeable effect on reproduction — especially at low frequencies. Generally, bass will increase relative to the middle and high frequencies as the loudspeakers are moved nearer the walls.

Placement hard against a wall, or worse still in the corner, may give rise to too much bass, with a boomy quality. With DM630/640 this may be improved to some extent by changing the port length (see installation section). In general, spacing from the walls of between 0.5m (2½ft) and 1.5m (5ft) is recommended, but it is well worth experimenting until you have the most acceptable sound. It is usually worth endeavouring to make the spacing between the two nearest walls uneven. As an example, the ratio of 0.5m (2½ft) to 1.5m (5ft) for the two walls can give excellent results.

We have been discussing the proximity of loudspeakers to the wall in the context of lower frequencies; but it is also worth mentioning that stereo information in a front-back plane will also improve if the rear wall is at least 0.5m (2½ft) from the back of the loudspeaker. The choice as to which of the four walls to place your loudspeakers near will largely depend on your arrangement of furniture. But again, the option of the longer, as opposed to the shorter wall is well worth trying. A final word about symmetry: for best balance of stereo information the boundary conditions relative to each of the two loudspeakers should be as acoustically similar as is possible.

E I N F Ü H R U N G

Die Digital-Monitor-Lautsprecherreihe 600 ist eine konsequente Weiterentwicklung der sehr erfolgreichen B&W-500er-Serie. Sie verfügt über eine Reihe neuer Merkmale zur weiteren Verbesserung der klanglichen Eigenschaften und Vergrößerung der Dynamik.

B&W unterhält eines der weltweit renommiertesten Forschungs- und Entwicklungszentren für Akustik. Viele Jahre Erfahrung in der Entwicklung von Lautsprechern für ein breites Spektrum von Anwendungen — vom Heimlautsprecher bis hin zum Studio-Monitor, vom Wand- bis hin zum Autopiebau — stehen hier zur Verfügung, um Ihnen Produkte bester Qualität bieten zu können.

Eine besondere Bedeutung hat heute das auf dieser Basis entwickelte B&W-Computer-Aided-Design (CAD) erlangt, ermöglicht es doch weitgehende Vorherbestimmung verschiedenster gewünschter Eigenschaften eines Lautsprechers. Zum Beispiel durch die Finite-Element-Analyse, eine Technik, mit deren Hilfe Membranverhalten prognostiziert werden kann oder auch Laser-Interferometrie zur Messung von Membran- oder Gehäusevibrationen. Zusätzlich hat B&W Zugang zu dem sensitivsten Meßinstrument, daß es gibt: dem Ohr. Professionelle Musiker aus Klassik und Pop wie auch Toningenieur und andere Experten aus der Plattenindustrie sind ständige Gäste bei den B&W-Hörproben...

Alle Systeme der B&W Serie 600 wurden mit Blick auf die Ansprüche digital aufgenommener Musik entwickelt, nämlich die Wiedergabe auch feinsten Details innerhalb eines großen Dynamikraumes. Das dies auch analogen Produktionen zu gute kommt, ist selbstverständlich.

Das Ziel dieser Anleitung ist, Ihr Wissen über das Produkt mit all seinen technischen Besonderheiten zu vergrößern und Ihnen so mehr Freude am Musikhören zu vermitteln. Da jeder hochwertige Lautsprecher in seiner Wiedergabequalität abhängig ist vom eingespeisten Signal und natürlich auch von dem Raum, in dem er steht, haben wir diesen Aspekten in den nächsten Kapiteln breiten Raum gewidmet.

B&W-Produkte werden weltweit in mehr als 40 verschiedenen Ländern vertrieben. Daß B&W das internationale Netz von Händlern mit allem Einsatz unterstützt — um Ihnen, dem Kunden, den bestmöglichen Service zu bieten, ist eine Selbstverständlichkeit. Sollte sich die Situation ergeben, daß Ihr Händler bei einem Problem nicht weiterhelfen kann, werden Ihnen die jeweiligen B&W-Vertriebsgesellschaften jederzeit zur Verfügung stehen.

WISSENSWERTES ZUM DESIGN

Die B&W-Serie 600 beinhaltet drei Lautsprechersysteme, die sich hinsichtlich ihrer Größe und damit in ihren Fähigkeiten zur Reproduktion tiefter Frequenzen unterscheiden. Die Leistungsfähigkeit wird ebenfalls durch die Veränderung

Das Gehäuse

B&W's Know How in der Gehäusekonstruktion, das sich nicht zuletzt durch die Verwendung modernster Laser-Meßmethoden zur Untersuchung von Gehäusevibrationen wie auch in der Erfindung und Markteinführung der Matrix-Konstruktion dokumentiert, erlaubt die Reduzierung unerwünschter Gehäuse-schwingungen bis zum Optimum. Alle 600er-Gehäuse werden aus hochverdichteten Span-

Die Frequenzweiche

Der Einsatz fortschrittlicher Computer-Hard- und Software erlaubt die Optimierung jeder einzelnen Komponente des Frequenzweichenbaus. Computertests während der Produktion gewährleisten einen hohen und einheitlichen Standard hinsichtlich möglicher Toleranzen bei den Komponenten wie auch dem Gesamtaufbau der Weiche.

Die Lautsprecherchassis

Der Hochtöner

In allen drei 600er-Boxen kommt der gleiche Hochtöner zum Einsatz. Es handelt sich um eine Metallkalotteneinheit mit einem sehr guten resonanzfreien Schwingungsverhalten über den gesamten Audiobereich. Die magnetische Kühlung der Schwingspule verbessert die Leistungsfähigkeit und vermindert drastisch eventuelle Kompressions-effekte, die durch eine starke Erwärmung der Schwingspule verbunden mit einem Wirkungsgradverlust bei großen Lautstärken auftreten können.

Tief-/Mitteltöner

DM620 Hier kommt ein neuer 200mm-Tief-/Mitteltönerlautsprecher mit einer verstärkten Polypropylen-Membran zum Einsatz. Die Schwingspule ist — zur Steigerung der Leistung — auf einem Kaptontäger gewickelt und mit einem Hochtemperaturkleber stabilisiert. Das System ist zur Verstärkung der Wiedergabe tieferer Frequenzen mit einer langhubigen 200mm-Passivmembran gekoppelt.

DM630 Die Konfiguration dieses Lautsprechers besteht aus zwei identischen Tieftönerchassis (gleiche technische Auslegung wie bei DM620), die in ein offenes Reflexsystem arbeiten. Zur Wiedergabe tieferer Töne sind große Hubbewegungen der Membran notwendig. Die Gleichschaltung zweier Chassis führt zu geringeren Membrananlenkungen, wodurch Verzerrungen deutlich reduziert werden und die

SPECIFICATIONS

DM620

DM630

DM640

DESCRIPTION	Floor standing, two-way, fourth-order, passive radiator digital monitor system with bi-wiring/bi-amplification facility, gold plated terminals and low-diffraction moulded grille frame	Floor standing, three-way, fourth-order, variable port, bass reflex digital monitor system with bi-wiring/bi-amplification facility, gold plated terminals and low-diffraction moulded grille frame	Floor standing, three-way, fourth-order, variable port, bass reflex digital monitor system with bi-wiring/bi-amplification facility, gold plated terminals and low-diffraction moulded grille frame
DRIVE UNITS	One 200mm (8in) bass/midrange with rigid die-cast chassis, reinforced polypropylene diaphragm and 31mm (1.2in) high-temperature voice coil on Kapton former. One 26mm (1in) high-frequency with metal dome, high-temperature voice coil and magnetic fluid cooling	Two 200mm (8in) bass/midrange with rigid die-cast chassis, reinforced polypropylene diaphragm and 31mm (1.2in) high-temperature voice coil on Kapton former. One 26mm (1in) high-frequency with metal dome, high-temperature voice coil and magnetic fluid cooling	Two 200mm (8in) bass with rigid die-cast chassis, Cobex diaphragm and 31mm (1.2in) high-temperature voice coil on Kapton former. One 160mm (6.5in) midrange with rigid die-cast chassis, Kevlar diaphragm and 31mm (1.2in) high-temperature voice coil on Kapton former. One 26mm (1in) high-frequency with metal dome, high-temperature voice coil and magnetic fluid cooling
FREQUENCY RANGE	-6dB at 44Hz and 30kHz	-6dB at 40Hz and 30kHz	-6dB at 35Hz and 30kHz
FREQUENCY RESPONSE	58Hz to 20kHz ± 2 dB on reference axis	53Hz to 20kHz ± 2 dB on reference axis	46Hz to 20kHz ± 2 dB on reference axis
REFERENCE AXIS	Horizontal: 605mm (23.8in) from bottom of cabinet	Horizontal: 710mm (28in) from bottom of cabinet	Horizontal: 830mm (32.7in) from bottom of cabinet
DISPERSION	Within ± 2 dB of response on reference axis 20Hz to 15kHz Horizontal: over 40° arc Vertical: over 10° arc	Within ± 2 dB of response on reference axis 20Hz to 15kHz Horizontal: over 40° arc Vertical: over 10° arc	Within ± 2 dB of response on reference axis 20Hz to 15kHz Horizontal: over 40° arc Vertical: over 10° arc
SENSITIVITY	90dB (2.83V, 1m)	91dB (2.83V, 1m)	91dB (2.83V, 1m)
IMPEDANCE	Nominal 8 Ω (not falling below 4 Ω)	Nominal 8 Ω (not falling below 4 Ω)	Nominal 8 Ω (not falling below 4 Ω)
CROSSOVER FREQUENCY	3kHz	400Hz and 3kHz	300Hz and 3kHz
INTERNAL VOLUME	30.6 litres (1.08cu.ft)	52.4 litres (1.85cu.ft)	(LF) 56.3 litres (2.0cu.ft) (MF) 3.0 litres (0.1cu.ft)
POWER HANDLING	Suitable for amplifiers with 25W to 100W output continuous into 8 Ω on undistorted speech and music programme	Suitable for amplifiers with 25W to 150W output continuous into 8 Ω on undistorted speech and music programme	Suitable for amplifiers with 25W to 150W output continuous into 8 Ω on undistorted speech and music programme
DIMENSIONS	Height: 742mm (29.2in) Width: 236mm (9.3in) Depth: 302mm (11.9in)	Height: 850mm (33.5in) Width: 236mm (9.3in) Depth: 407mm (16.0in)	Height: 965mm (38.0in) Width: 236mm (9.3in) Depth: 407mm (16.0in)
WEIGHT	14.2kg (31.2lb)	19.2kg (42.2lb)	24.0kg (52.8lb)

Listening and record suggestions

Your B&W 600 Series will take you a giant step nearer to listening to the music rather than to the loudspeakers. You will hear much more of the desirable ambience and detail in good recordings; unfortunately the faults in poor recordings will also be revealed. B&W have produced three special compact disc recordings that will enable you to enjoy a full appreciation of your new system. They are available from your dealer.

Luister — en muzieksuggesties

Uw B&W 600 Series luidspreker is een gigantische stap voorwaarts op het gebied van luisteren naar muziek in plaats van naar luidsprekers. U hoort veel meer gewenste diepte en details bij goede opnames. Fouten van slechte opnames worden echter ook duidelijk hoorbaar. B&W heeft drie speciale CD's geproduceerd, waarmee u volledig van uw nieuwe systeem kunt genieten. Ze zijn verkrijgbaar bij uw leverancier.

Sugerimenti d'ascolto

Il vostro sistema B&W dello Serie 600 vi porterà più vicino all'ascolto della musica piuttosto che del diffusore, ascolterete molto di più della spazialità e dei dettagli alle ottime incisioni: purtroppo verranno evidenziati i difetti delle registrazioni scadenti.

Schallplattenempfehlungen

Ihr B&W-Serie 600-Lautsprecher bringt Sie wieder ein großes Stück weiter auf dem Weg zur perfekten Reproduktion von Musik. Sie werden bei wirklich guten Aufnahmen z.B. hinsichtlich der räumlichen Darstellung wie auch der instrumentalen Staffellung sehr viel mehr Details wahrnehmen als bisher, allerdings bei schlechten Aufnahmen auch die Aufnahmefehler deutlich heraus hören. B&W hat deshalb drei spezielle CDs produziert, die Musikbeispiele enthält, die sowohl klanglich und aufnahmetechnisch wie auch in der Interpretation als hervorragend gelten. Diese CDs sind bei Ihrem B&W-Händler erhältlich.

Suggestions d'écoutes de disques

Votre système DM620/630/640 vous rapprochera plus de la Musique que d'une reproduction habituelle. Vous ressentirez davantage tous les détails qui créent l'atmosphère avec de bons disques, malheureusement les défauts des enregistrements 'moyens' seront aussi audibles.

Sugerencias para audicion

Su sistema B&W Serie 600 le harán dar un paso gigantesco en su acercamiento hacia la audición de la música y no de los altavoces. Usted podrá oír mucho más la atmósfera deseable y los detalles en las buenas grabaciones, cuya oferta, desafortunadamente es notablemente pobre. B&W ha producido tres grabaciones



BW001



BW005



BW002



BW006



BW003



BW007

