

Bowers & Wilkins

Custom Installation



**AVAILABLE AT
DIGITAL CINEMA**

SA250 Mk2

1. Introduction

Thank you for choosing Bowers & Wilkins.

The SA250 Mk2 is designed to power and apply the correct equalisation to the ISW-3 and ISW-4 custom install subwoofers. It is not suitable for driving any other loudspeakers.

Please read this manual fully before unpacking and installing the product. It will help you to optimise its performance. In addition, please read and observe the important safety instructions on the accompanying leaflet. Keep both documents in a safe place for future reference.

Installation instructions for the subwoofers themselves are provided with those products.

B&W maintains a network of dedicated distributors in over 60 countries who will be able to help you should you have any problems your dealer cannot resolve.








Environmental Information

This product complies with international directives, including but not limited to:

- i The Restriction of Hazardous Substances (RoHS) in electrical and electronic equipment,
- ii The Registration, Evaluation, Authorisation and restriction of Chemicals (REACH)
- iii The disposal of Waste Electrical and Electronic Equipment (WEEE).

Consult your local waste disposal authority for guidance on how properly to recycle or dispose of this product.

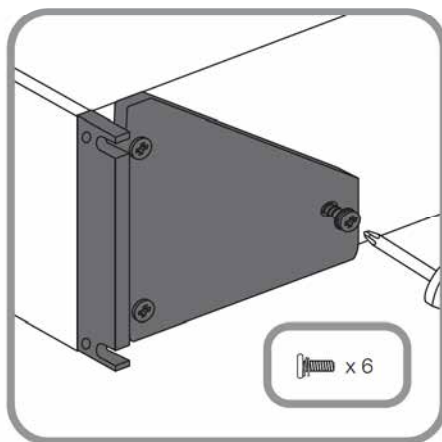
2. Carton contents

	1
	1
	2
	4
	6
	4
	2

In addition to the amplifier itself, check in the carton for:

- 1 x Power cable
- 1 x 4-pole Neutrik® Speakon® plug
- 2 x Rack-mount brackets
- 4 x Long Phillips screws and washers
- 6 x Short Phillips screws and washers
- 4 x Rubber hole plugs
- 2 x Handles

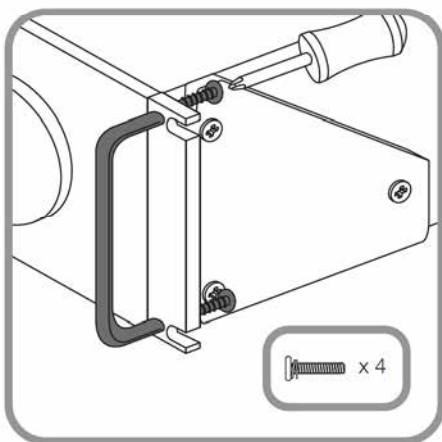
3. Installation



The SA250 Mk2 subwoofer amplifier is intended to be installed in a standard 19-inch equipment rack. It is supplied with rack-mount brackets, but not rack mount bolts and nuts. Ensure that, once mounted in the rack, the amplifier is well ventilated and that its ventilation apertures are not obstructed. If the system is taken out of use for a long period, disconnect the subwoofer amplifier from the mains power supply.

Rack Mounting

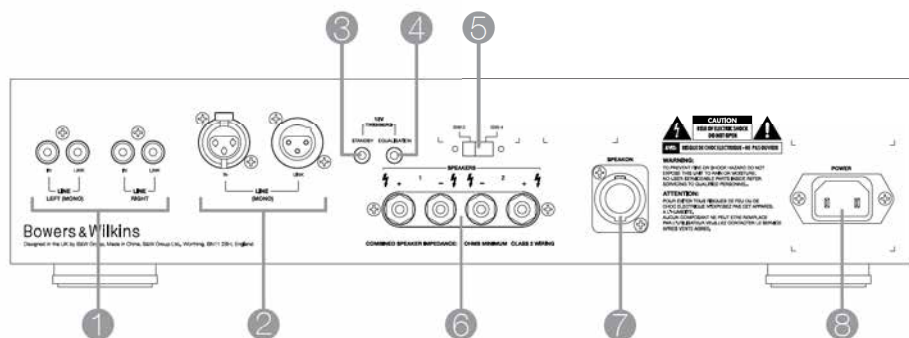
The SA250 Mk2 is supplied with two rack mounting brackets for installation in standard equipment racks (above). Attach the brackets by inserting three of the short Philips head machine screws through each bracket into the threaded holes in the side of the amplifier.



Rack Handles

Use of the handles is optional. Attach them by inserting two long Phillips head screws through each bracket into the threaded holes in the handles (above). If you do not use the handles, block the exposed holes in the brackets with the rubber plugs supplied.

4. Controls and Connections

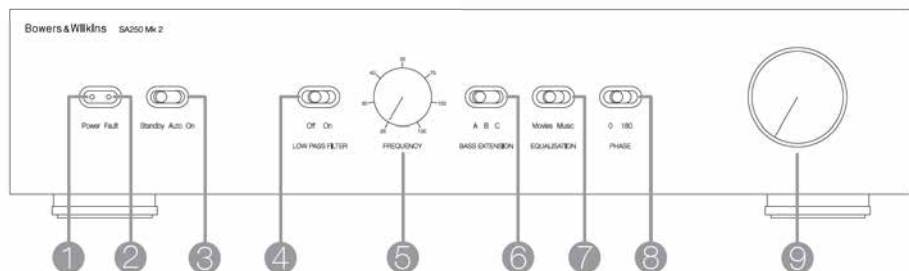


Rear Panel Sockets and Switches (above)

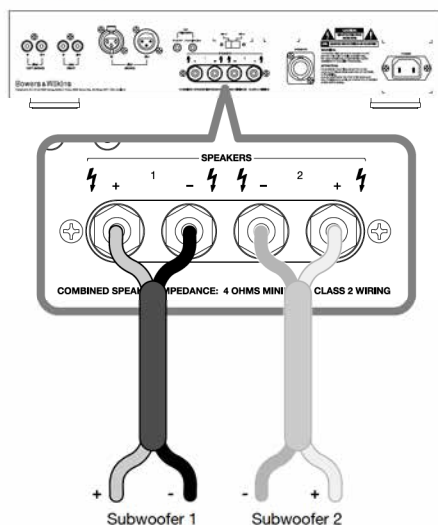
- 1 Unbalanced Line In and Link Out sockets (RCA Phono)
- 2 Balanced Line In and Link Out sockets (XLR)
- 3 On/Standby trigger input (3.5mm mini-jack)
See also Section 6 – Switching On and Off
- 4 Movies/Music EQ trigger input (3.5mm mini-jack)
See also Section 7 – All Applications
- 5 EQ selection for ISW-3 or ISW-4 (2-way slider switch)
- 6 Dual speaker outputs (4mm binding posts)
- 7 Dual speaker outputs (4-pole Neutrik® Speakon®)
- 8 Power input socket (IEC C18)

Front Panel Controls (below)

- 1 Power: Illuminates to indicate the amplifier is switched on.
- 2 Fault: Illuminates to indicate a fault condition.
- 3 Standby/Auto/On: Provides switch-on and standby options.
- 4 Low-pass Filter: Engages or defeats the subwoofer filter.
- 5 Frequency: Sets the low-pass cut-off frequency of the subwoofer filter.
- 6 Bass Extension: Provides three bass extension options.
- 7 Equalisation: Provides equalisation options for music or movie programme material.
- 8 Phase: Reverses the subwoofer output phase.
- 9 Volume: Sets the overall volume of the subwoofer.



5. Connecting



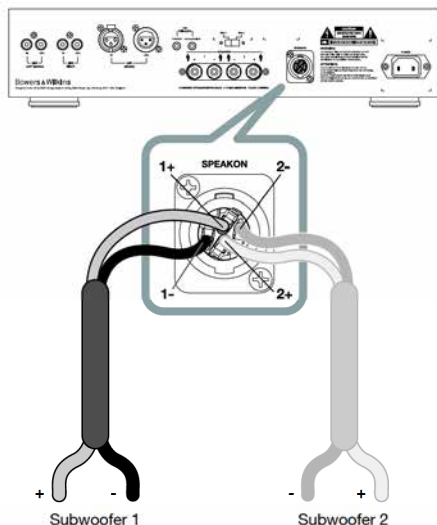
All audio connections should be made with the equipment disconnected from mains power.

Connection to the subwoofer(s)

A single SA250 Mk2 can drive one or two identical subwoofers in parallel. If you need more than two subwoofers in the installation, or if you want separate left and right channel subwoofers in a stereo installation, you will need more than one amplifier.

See the separate manual supplied with the subwoofer for information on the location of the positive and negative input terminals on the subwoofer itself.

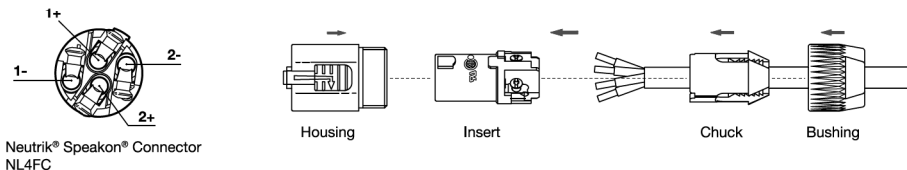
Use either the binding post outputs (above) or the Neutrik® Speakon® output (above right), wiring either one or two subwoofers as required.



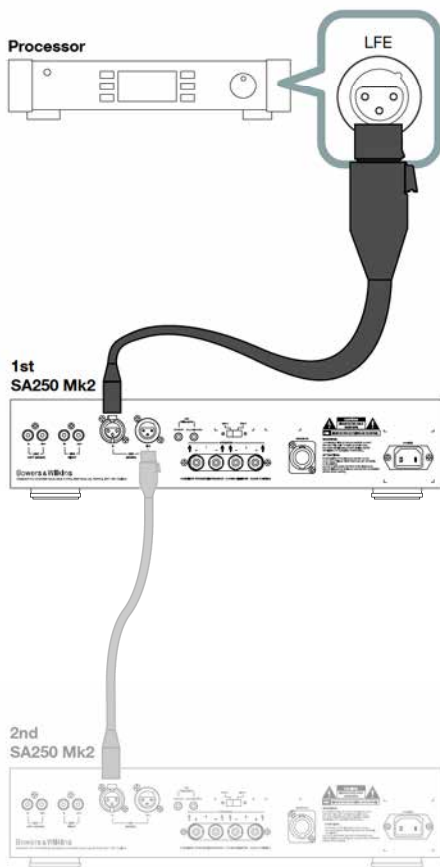
The Speakon® plug is shown disassembled in the figure below.

In all cases, observe the correct polarity connections. Incorrect connection will result in a poor imaging and/or a loss of bass output.

Keep the total impedance of the speaker cable below the maximum recommended in the speaker specification.



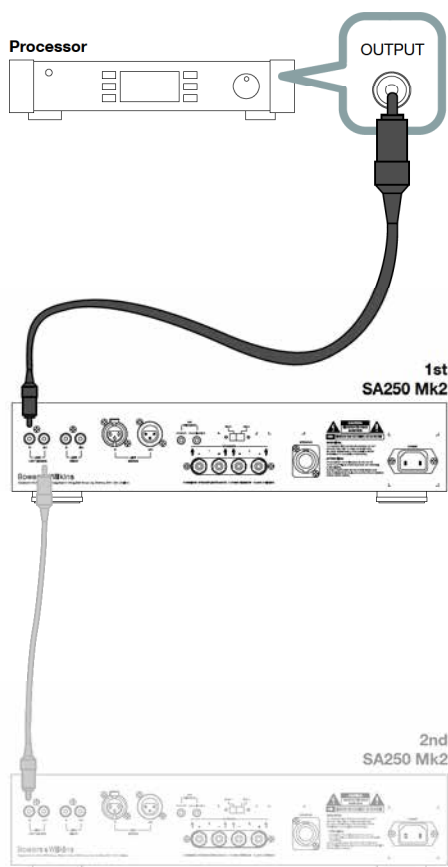
Neutrik® Speakon® Connector NL4FC



Connection to a surround processor

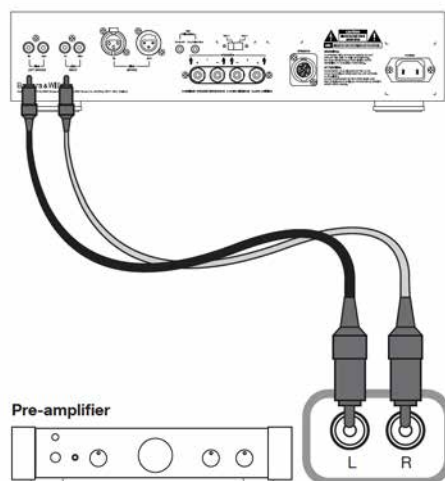
Connect the LFE or Subwoofer output of the processor to a Line In socket of the SA250 Mk2.

If the processor has a balanced output, use this for preference with XLR connectors (above).



If only unbalanced connection is available, use RCA Phono connectors and the left channel input of the SA250 Mk2 (above).

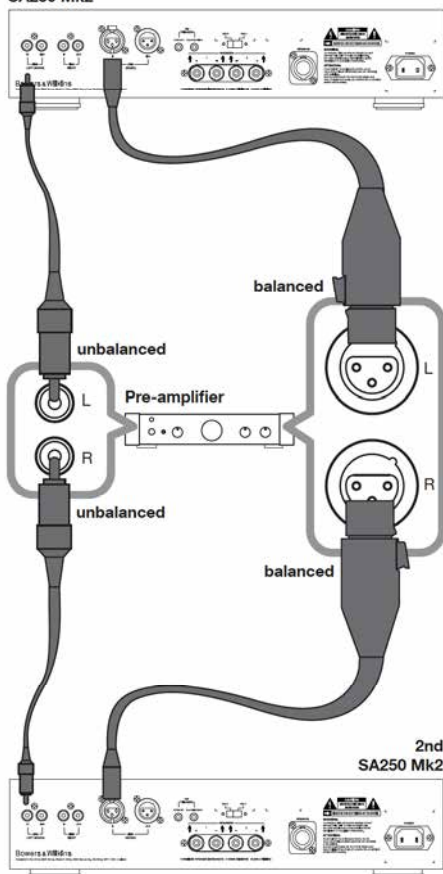
In both cases, an optional connection to a second amplifier is shown.



Connection to a stereo pre-amplifier

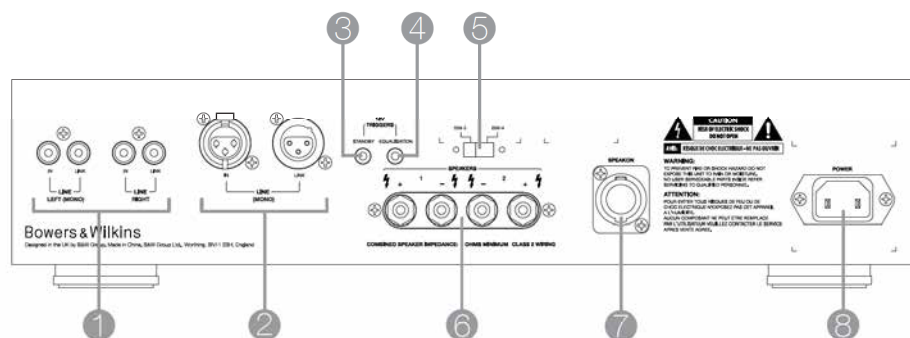
You can combine both left and right channels into one or two subwoofers using a single SA250 Mk2. In this case, only unbalanced connection is possible (above).

1st SA250 Mk2



If you want to maintain stereo separation to the lowest frequencies by having a subwoofer for each channel, you will need a second SA250 Mk2. In this case, if the pre-amplifier allows, you can use balanced connections (above right). Otherwise, use unbalanced connections (above left).

6. Setting the controls



On the Rear Panel Subwoofer Equalisation

Set the subwoofer switch (5) on the rear panel to the appropriate model.

On the Front Panel Switching On and Off

The subwoofer amplifier is best switched on after any other items and switched off first. The Standby/Auto/On switch (3) operates as follows:

Standby: The subwoofer amplifier will become active when 12V is applied to its STANDBY TRIGGER input. When 0V is applied to the trigger, the subwoofer amplifier will return to the Standby state. The indicator will glow green when the subwoofer amplifier is active and red when the subwoofer amplifier is in Standby.

Auto: The subwoofer amplifier will initially become fully active and the indicator will glow green. After about 5 minutes without an input signal, the subwoofer amplifier will automatically go to the Standby state, when the indicator will glow red. When an input signal is detected, the subwoofer amplifier will automatically become active and the indicator will glow green. The subwoofer amplifier will return to Standby after about 5 minutes with no input signal. Some audio-visual processors incorporating an automatic set up procedure may be confused by a subwoofer amplifier with an auto On/Standby function and a potentially damaging fault condition may arise. The subwoofer amplifier is best left switched on and fully active during set up if such a processor is used.

On: The subwoofer amplifier will remain fully active and the indicator will glow green.

Home Theatre

Set the LOW-PASS FILTER switch (4) to Off.

The setting of the FREQUENCY (5) control is now irrelevant.

Set the BASS EXTENSION switch (6) initially to A.

Set the EQUALISATION switch (7) to Movies.

Set the PHASE switch (8) initially to 0.

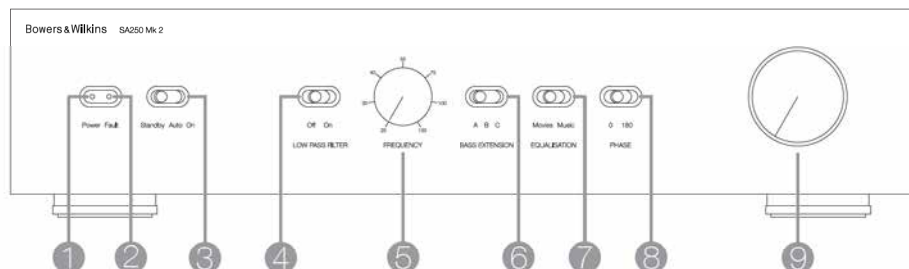
Set the VOLUME control (9) initially to the 9 o'clock position.

See the **Fine Tuning** section for more.

The subwoofer and subwoofer amplifier are not THX® licensed components, but may be used with a THX® controller if desired. If a THX® controller is used, ensure that the subwoofer function is enabled. This incorporates all the filtering and level setting required for the subwoofer in all modes. For level calibration, the internal test noise and channel level controls in the THX® controller should be used. In all cases the levels should be set to obtain 75dB SPL (C-weighted) at the listening position from the controller's internal noise test signal.

With other processors, configure the front and surround speakers to "large" or "small" as appropriate before setting the levels. Use the internal noise test signal and volume controls of the processor to set the levels of all the speakers. Only change the VOLUME control on the subwoofer amplifier if there is not enough range in the processor to achieve the correct levels. Inexpensive sound level meters are readily available from electronics stores and can be used to calibrate the levels. Refer to your processor manual for further details on how to set the levels.

7. Fine Tuning

**2-channel Audio**

Set the LOW-PASS FILTER switch (4) to On.

Set the FREQUENCY control (5) to match the -6dB low frequency cut-off frequency of the satellite speakers.

Note: Both -3dB and -6dB figures can be found in the specification of each Bowers & Wilkins speaker model. If the satellite speaker manufacturer quotes only a -3dB frequency, the optimum setting for the FREQUENCY control should be between 0.6 and 0.9 times that figure. The more gradual the low frequency roll-off of the satellite speakers, the lower the frequency should be set.

Set the BASS EXTENSION switch (6) initially to position A.

Set the EQUALISATION switch (7) to Music.

Set the PHASE switch (8) initially to 180.

Set the VOLUME control (9) initially to the 9 o'clock position.

See the Fine Tuning section for more.

Before fine tuning, make sure that all the connections in the installation are correct and secure.

Home Theatre

In home theatre systems, the subwoofer (LFE) signal is a separate channel rather than an extension of the signal to the satellite speakers. The subwoofer's LOW-PASS FILTER should be switched to Off because the processor provides all necessary filtering. However, the position of the PHASE switch must still be assessed. Normally the phase will be set to 0, but if the subwoofer is positioned at a distance significantly different from the other speakers, or the power amplifier driving the other speakers happens to invert the signal, the 180 position may be preferable. Listen with the switch in both positions and choose the one that gives the fullest sound. If there is little difference, leave the switch at 0.

Surround sound processors normally have a calibrated noise signal that can be used to set the relative levels of all the speakers, making the task somewhat more straightforward than for 2-channel audio. However, do not be afraid to alter the settings to your personal preference. It is all too easy to get carried away with the capabilities of the subwoofer, especially with some special low-frequency effects. Often a more realistic portrayal, and one more satisfying in the long term, is to be had by setting the subwoofer level lower than the standard calibration level.

2-channel Audio

Set the system up in the preferred position and play some material with a steady bass content.

The optimum settings of the PHASE switch and the FREQUENCY control are inter-related and also dependent on the low-frequency cut-off characteristic of the satellite speakers. However, the settings recommended above for the FREQUENCY control and PHASE switch have been chosen to integrate well with most satellite speaker bass alignments.

Using the initial settings, first check the setting of the PHASE switch. Choose the option that gives the fullest sound. Normally the recommended option will be optimum, but may not be in certain circumstances. These may be that the power amplifiers feeding the satellite speakers invert the signal or that the subwoofer is not placed close to the satellite speakers.

Next, adjust the VOLUME of the subwoofer amplifier relative to the satellite systems to your liking. Use a wide variety of programme material to get an average setting. A setting that sounds impressive on one piece may sound overpowering on another. Listen at a realistic volume level as the perception of musical balance varies with sound level.

Finally, adjust the FREQUENCY control to give the smoothest transition between the subwoofer and satellite speakers.

All Applications

The BASS EXTENSION switch offers three options of subwoofer bass extension. Position A gives the greatest extension and position C gives the least extension. Position B provides a compromise setting. If the system is to be used at very high volume levels or in a large listening room, restricting the bass extension by selecting either B or C may help ensure that the subwoofer is not asked to exceed its performance limits. In most situations the BASS EXTENSION switch should be left in position A.

The EQUALISATION switch alters the subwoofer bass roll-off alignment appropriate to Movies or Music listening. The Movies position gives a "drier" alignment, more suited to the demands of action movie low frequency effects. The Music position is suited to a faster more accurate bass line.

The 3.5mm EQUALISATION input on the back panel is designed to receive a 12V signal that will toggle the Movies/Music setting at the front panel. Set appropriately, the 12V trigger output of a processor can automate ideal performance of the subwoofer.

To use this feature, set the front panel EQUALISATION switch to Movies. When 12V is applied to the trigger input, the EQ will change it to Music. When 0V is applied to the trigger input, the EQ reverts to Movies. Care must be taken in setup of the processor in order to take advantage of this feature.

STANDARDS CONFORMITY

NORTH AMERICA



Conforms to ANSI/UL Standard 60065 7th Edition
Certified to CAN/CSA Standard C22.2 No. 60065



Complies with Part 15 of the FCC Rules

Operation is subject to the following conditions:

1. This device does not cause harmful interference and
2. This device must accept any interference received, including interference that may cause undesired operation.

EU DECLARATION OF CONFORMITY

We,

B&W Group Ltd.

whose registered office is situated at

Dale Road, Worthing, West Sussex, BN11 2BH, United Kingdom

declare under our sole responsibility that the products:

SA250 Mk2

comply with the EU Electro-Magnetic Compatibility (EMC) Directive 89/336/EEC, in pursuance of which the following standards have been applied:

EN 55020 : 2002	Sound and television broadcast receivers and associated equipment - Immunity characteristics
EN 55013 : 2001	Sound and television broadcast receivers and associated equipment - Radio disturbance characteristics
EN 61000-3-2 : 2000	Electro-magnetic compatibility (EMC) — Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16A per phase)
EN 61000-3-3 : 1995	Electro-magnetic compatibility (EMC) — Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16A per phase and not subject to conditional connection

and comply with the EU Low Voltage Directive 73/23/EEC and amendment 93/68/EEC, in pursuance of which the following standard has been applied:

EN 60065 : 2002	Audio, video and similar electronic apparatus - Safety requirements
-----------------	---

This declaration attests that the manufacturing process quality control and product documentation accord with the need to assure continued compliance.

The attention of the user is drawn to any special measures regarding the use of this equipment that may be detailed in the owner's manual.

Signed:

G Edwards
Executive Vice President, Operations
B&W Group Ltd.

Bowers & Wilkins

B&W Group Ltd
Dale Road
Worthing West Sussex
BN11 2BH England

T +44 (0) 1903 221 800
F +44 (0) 1903 221 801
info@bwgroup.com
www.bowers-wilkins.com

B&W Group (UK Sales)
T +44 (0) 1903 221 500
E uksales@bwgroup.com

B&W Group North America
T +1 978 664 2870
E marketing@bwgroupusa.com

B&W Group Asia Ltd
T +852 3472 9300
E info@bwgroup.hk

Copyright © B&W Group Ltd. E&OE
Printed in China