

Operation Manual for
BHC-2 and BHC-2RF
Single Axis Helmholtz Coils



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1. About this Manual

This manual provides the information necessary to help customers install and operate the BHC-2 or BHC-2RF Helmholtz Coils from Bartington Instruments. The relevant products outline drawings can be found on the [outline drawing page](#).

This manual should also be read in conjunction with the product brochure [DS4984](#) which can also be found on the product page.

Photographs of key components are included, labelled with numbers. A number in the text in square brackets [] refers to that label.

Bartington Instruments cannot advise on the integration of this equipment with any third party products.

1.1. Symbols Glossary

The following symbols used within this manual call your attention to specific types of information:



WARNING: Indicates a situation in which serious bodily injury or death could result if the warning is ignored.



Caution: Indicates a situation in which bodily injury or damage to your instrument, or both, could result if the caution is ignored.



Identifies items that must be disposed of safely to prevent unnecessary damage to the environment.

Note: Provides useful supporting information on how to make better use of your purchase.

2. Safe Use



WARNING: This product is not qualified for use in explosive atmospheres or life support systems. Consult Bartington Instruments for advice.



WARNING: The electromagnetic field from this product may interfere with the operation of pacemakers and other medical devices. Consult your device's manufacturer before operation.



WARNING: In the UK/EU there is legislation that recommends controlling magnetic field exposure. For this reason safe operation should be observed when using the BHC-2 & BHC-2RF by controlling the magnetic field strengths you generate using this product, and understanding the exposure to users.



Caution: At maximum current input the coils can warm up to temperatures greater than 50°C. Avoid touching the coils during operation.

3. Introduction

The BHC-2 & BHC-2RF Helmholtz Coil is a portable, single axis, Helholtz Coil. The coils produce a magnetic field when a current is circulated through it. The amplitude of the field generated is proportional to the current applied. Both DC and AC magnetic field can be generated. The coils are typically used for the calibration of magnetic field sensors.

Note: The BHC-2 and BHC-2RF is not compatible with a Bartington Instruments PA1 Power Amplifier.

4. BHC-2 & BHC-2RF Helmholtz Coil Features

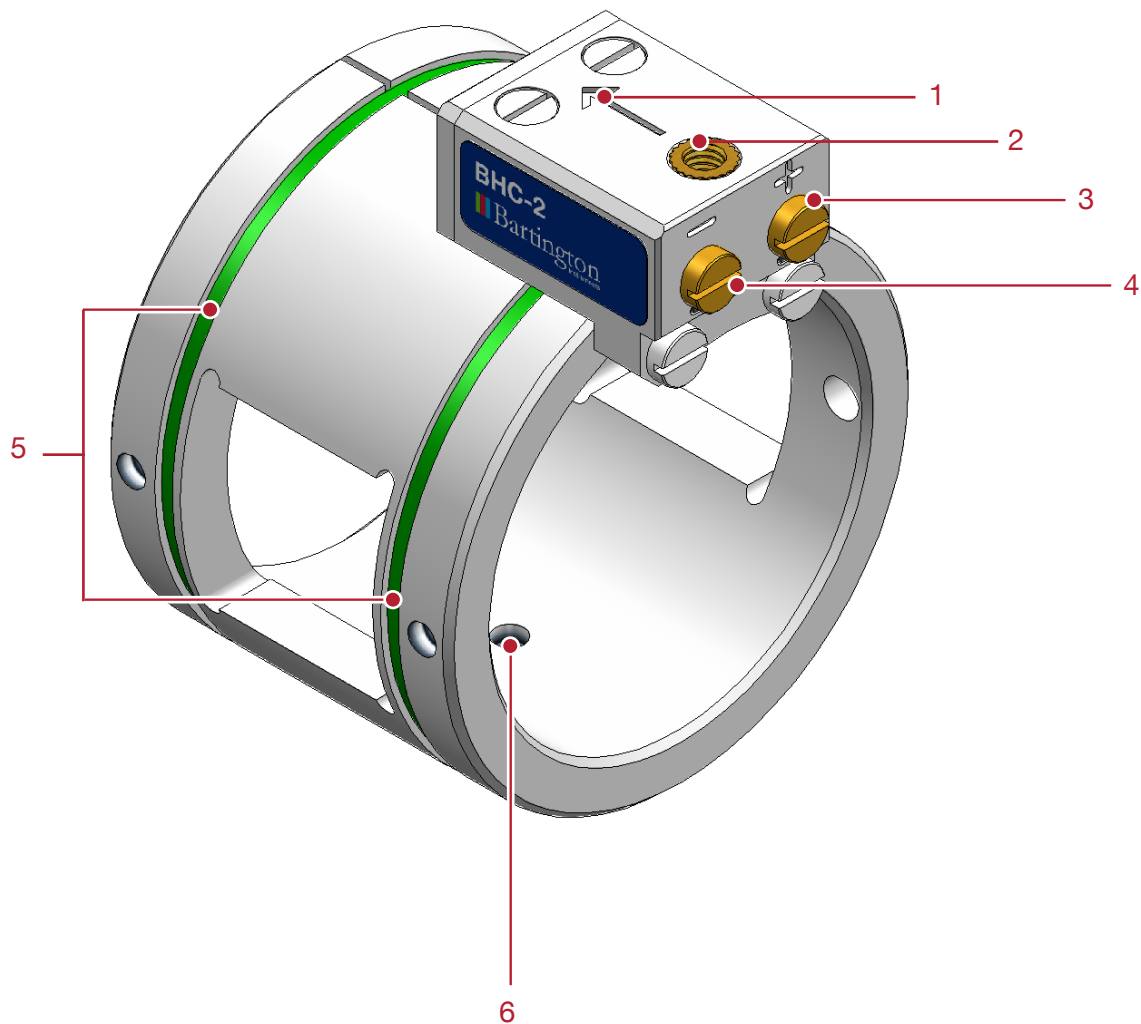


Figure 1. BHC-2 & BHC-2RF Helmholtz Coil

Key

- 1. Field direction arrow
- 2. M6 mounting feature
- 3. Positive terminal
- 4. Negative terminal
- 5. Coils1
- 6. 1/4" x 20UNC thread

Earlier models will have a green polypropylene body. Later models will have a white acetal body.

5. Field Direction

The direction of the magnetic field is denoted by the arrow on top of the connector block, when voltage is applied at the connection terminals as per the polarity (“+” and “-” symbols) shown on the connector block.

6. Current Source

In most applications, a source of fixed current would be necessary to generate a stable and known magnetic field. A battery-powered power supply, pocket sized, would be well suited to operate the BHC-2 at the field. Currents of 1, 10 and/or 100 mA are often well suited to many checks on magnetic probes and magnetometer systems with the BHC-2.

7. BHC-2 & BHC-2RF Helmholtz Coil Operation

7.1. Installation

The BHC-2 & BHC-2RF Helmholtz Coil should be used in a magnetically clean area, that is, an area with small magnetic gradient, and with little magnetic disturbances.

The BHC-2 & BHC-2RF should be installed on a non-metallic base and kept away from:

- Large conductive objects which may induce currents, and therefore secondary magnetic fields, when generating AC magnetic fields.
- Sources of magnetic field, either DC (e.g. large objects made of magnetic materials) or AC (e.g. mains powered equipment) as these will distort the magnetic field around them, and may affect the shape and extent of the homogeneous area.

Ideally a magnetic field survey should be carried out to assess the suitability of the site. This can be carried out using a Mag-03 Three-axis fluxgate magnetometer connected to a Spectramag-6 Data Acquisition Unit. Please contact support@bartington.com for further assistance.

8. Absolute Maximum Power

The maximum rated current of the Helmholtz Coil, as defined in the product brochures, should not be exceeded.

The BHC-2 has a self-resetting fuse that opens at 400mA.

9. Mounting Accessories

A range of mounting accessories are available to mount Bartington Instruments sensors in the centre of the homogeneous area. The Mag-13MS and associated mounting plate is recommended to be used as a reference sensor for periodic checks of the BHC-2 & BHC-2RF.

10. Troubleshooting, Care and Maintenance

In the event of any apparent malfunction, please email: service@bartington.com or telephone the Bartington Instruments service team on: +44 (0)1993 706565.

11. Storage and Transport

The BHC-2 & BHC-2RF Assembly is a precision electronic instrument and should be treated as such.

Bartington Instruments has supplied this product in appropriate packaging for transportation. It is recommended that this packaging is used for any future transport.

Refer to the product brochure for this product's maximum environmental, electrical and mechanical ratings.



Caution: Exceeding the maximum environmental ratings may cause irreparable damage to the equipment.

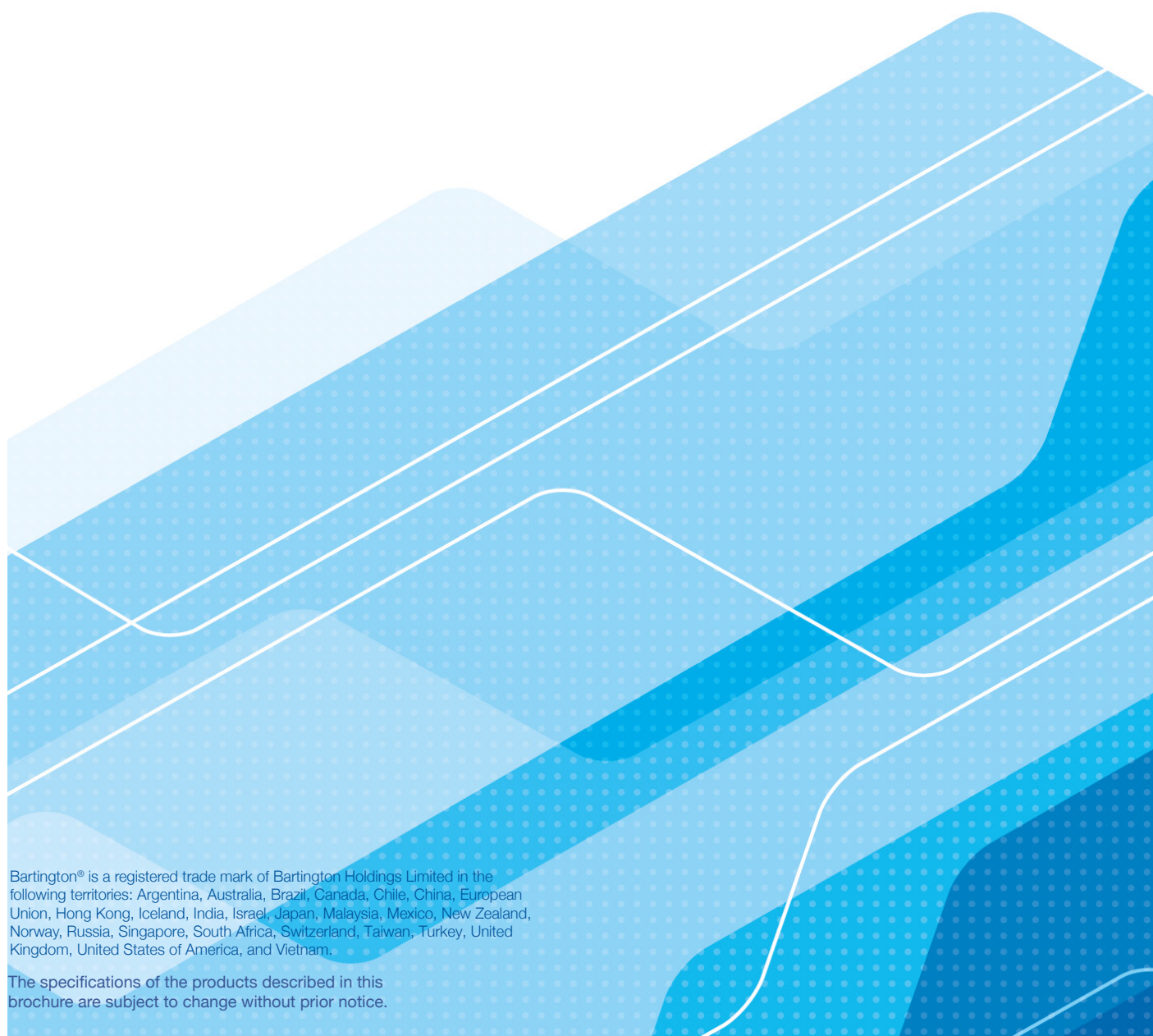
12. Disposal

This product should not be disposed of in domestic or municipal waste. For information about disposing of this product safely, check local regulations for disposal of electrical / electronic products.

12.1. Waste Electrical and Electronic Equipment (WEEE) Regulations



This product complies fully with Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) and WEEE Regulations current at the time of printing.



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The specifications of the products described in this brochure are subject to change without prior notice.

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