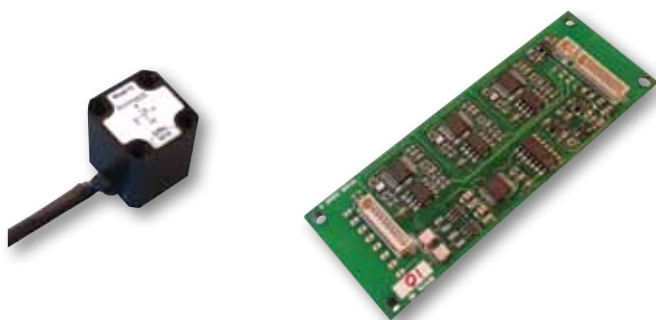


# BartingtonNews

the Newsletter from Bartington Instruments

## New magnetic field probe for customer-designed electronics

Bartington's two part Mag612 sensor enables the probe to be installed separately from its electronics, connected by a cable up to 3 metres in length.



The probe is small (20x20x20mm) and lightweight (30g excluding cable), and can be used for low noise measurements (noise floor  $\leq 20\text{pT}_{\text{rms}}/\sqrt{\text{Hz}}$  at 1Hz) from DC to more than 3kHz.

It can be purchased separately by customers who want to design their own electronics. A schematic is also available to assist with the design. Alternatively customers can buy the electronics with the probe, either packaged or unpackaged.

[www.mag612.com](http://www.mag612.com)

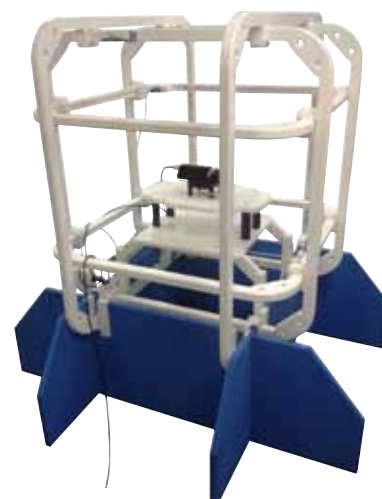
## 1 metre Helmholtz Coil now available

Bartington's first 1 metre Helmholtz Coil has now been delivered.

The 130kg HC2 coil assembly is part of the company's modular Helmholtz Coil system consisting of coils, power amplifier and control unit. For ease of shipping and installation, the coils are provided in flat pack form for assembly at the customer's chosen location.

The HC2 is supplied with an integral sample table. This allows larger items to be studied or calibrated against a generated magnetic field.

[www.bartington.com/helmholtz](http://www.bartington.com/helmholtz)



## Canadian Navy buys 14 Mag-03RCs for degaussing range

The Royal Canadian Navy has ordered 14 of our Mag-03RC marine range magnetometers. The sensors will be used to measure the magnetic signatures of ships during magnetic silencing treatments (deperming).



Bartington trained the RCN personnel in the use of the equipment in July, and the sensors have now been delivered together with the associated cables and a DAS1 data acquisition system.

Degaussing and deperming are necessary procedures to reduce a vessel's chances of detection, and vulnerability to sea mines, by minimising its magnetic signature. The Mag-03RC has been specially designed for long-term installation up to 2km from its DAS1 control unit. This is a modular system consisting of one or more Decaport analogue interface modules to which the sensors are connected, and a built-in PC for running data analysis software.

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# BartingtonNews

## MS used for evaluating soil pollution

Recently published research by Loughborough University shows magnetic susceptibility (MS) measurement to be a simple, reliable and rapid technique for evaluating levels of pollution in urban soil contamination.

Soil pollution can be analysed through techniques such as X-ray Fluorescence (XRF) spectrometry and Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS), but these are time consuming and expensive. The Bartington MS2 meter and MS2B sensor used by the researchers are considerably cheaper than the specialised equipment needed, and much more portable.

The researchers, Loughborough's Chris Crosby and colleagues, gathered samples from the Wolverhampton ringroad and the Birmingham Mainline canal, which were subjected to MS evaluation and also geochemical analysis using XRF. The results showed a link between MS measurements and the geochemical analysis, particularly with levels of Fe, Cu, Zn and Pb. Further analysis was able to suggest where an increased concentration of metals was caused by human activity.

The research highlights the usefulness of magnetic susceptibility as a means to characterise urban soil pollution, in an economic, fast and reliable manner.



C. J. Crosby, M. A. Fullen & C. A. Booth (2014) Potential linkages between mineral magnetic measurements and urban roadside soil pollution (part 2), *Environmental Science Processes & Impacts*, 16, 548-557.

C.J. Crosby, C.A. Booth, D. Appasamy, M.A. Fullen & K. Farr (2014) Mineral magnetic measurements as a pollution proxy for canal sediments (Birmingham Canal Navigation Main Line), *Environmental Technology*, 35:4, 432-445.

## Gradiometry uncovers ancient Kent settlements

An archaeological project supported by Bartington Instruments to investigate the development of Kent during Iron Age, Roman and Saxon times has been highly successful.



The Canterbury Hinterland project, a joint university project directed by Cambridge's Dr Lacey Wallace and Oxford's Dr Alex Mullen, reports that it uncovered numerous features beneath the land surface that greatly expand our understanding of the development of rural settlements around Canterbury.

The project used magnetometry to survey more than 33.5 hectares (33,500m<sup>2</sup>) in 540 grids across four sites. Iron Age and Roman enclosures were detected; an Anglo-Saxon cemetery was mapped; a suspected Romano-Celtic temple identified; and, most unexpected of all, a planned complex of enclosures and structures with defined streets was discovered. The latter includes a large building measuring about 42x18m, with an outer and an inner wall and a line of columns running down the middle, and also large rectilinear areas that could be sunken basements or pools.

Bartington Instruments has supported the project with the provision of a Grad601 gradiometer. Magnetometry proved a useful, non-invasive technique for detecting features hidden to the naked eye, suitable for all kinds of weather and ground type, and complementing other methods such as ground penetrating radar to build up a full picture of the sites.

## More flexible surveys with data logger upgrade

An upgrade to the DL601 Data Logger gives Grad601 users the ability to choose between survey modes from the main menu.

Previously the data logger had to be factory set to either Grid or NMEA mode. Grid mode saves survey data in predefined grids that must be downloaded at the end of the survey; in NMEA mode, data is sent through to a PC in real time using NMEA format. It is then associated with location information to produce a reliable map of the survey site regardless of the surveyor's course.

Previous data logger versions can be upgraded if the unit is returned to Bartington Instruments.

