

Operation Manual for
TLMS-C Capped
Magnetic Shields

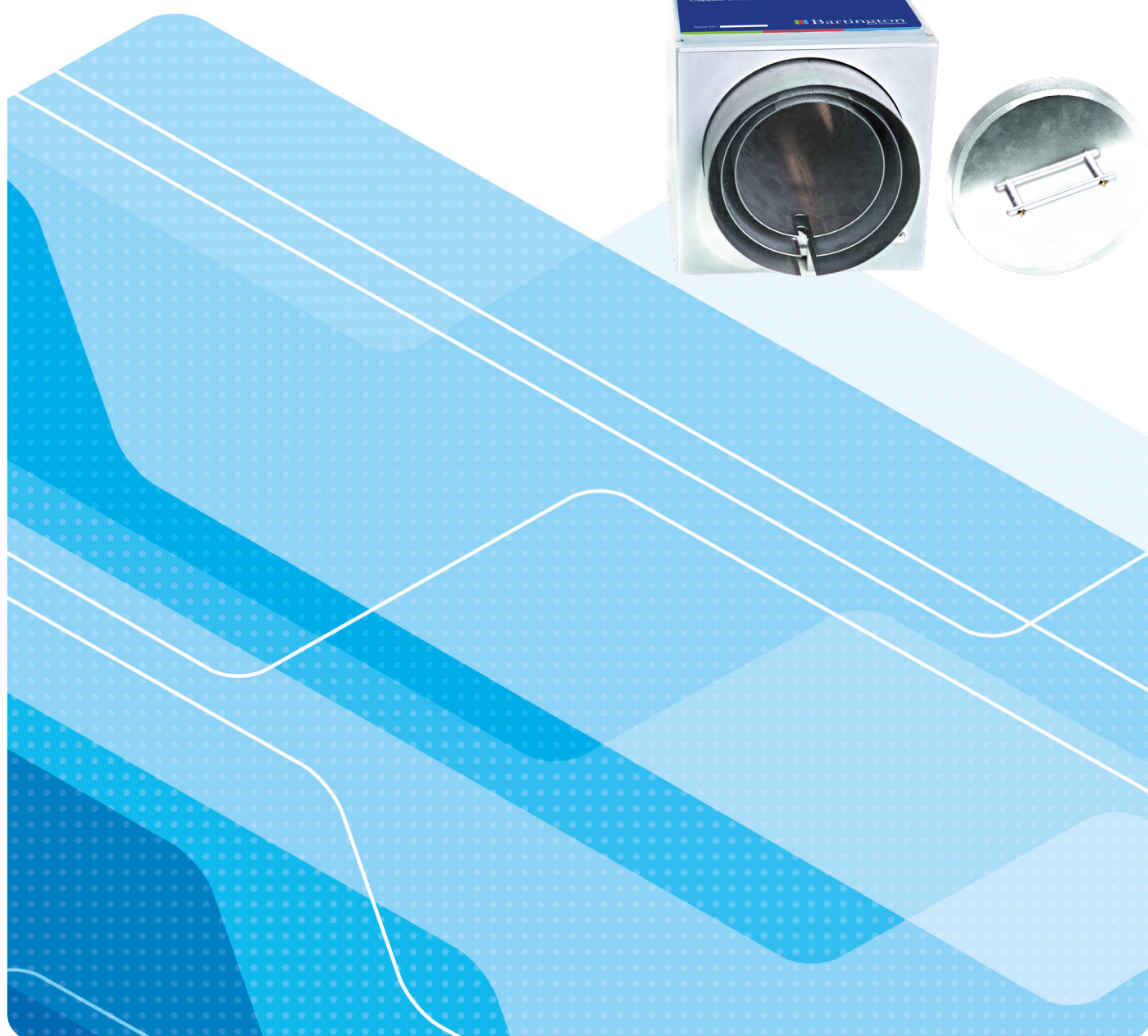


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1. About this Manual

This document describes the installation, operation and maintenance of the TLMS-C100 and TLMS-C200 Capped-End Magnetic Shields. It should be read in conjunction with product brochure [DS0014](#), and the drawings ([Magnetic Shields Outline Drawings](#)) which can be found on the Magnetic Shields [product page](#).

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: These products are not qualified for use in explosive atmospheres or life support systems. Consult Bartington Instruments for advice.

3. Introduction to the Magnetic Shields

These Mumetal cylindrical chambers divert the lines of magnetic flux around the layers, reducing the magnetic field inside them.

Capped-end versions are available, the capped-ends available in two diameters. The capped-end versions have additional shielding at either end of the sample chamber and so are less reliant on orientation. Either will typically attenuate the Earth's field of $\approx 50,000\text{nT}$ to a level of a few nT, enabling the user to measure remanent magnetism in small components or errors in magnetic sensors.

Even small inhomogeneities or stresses in the shield can lead to low level magnetism accumulating inside the cylinder. This can be removed with the Bartington Instruments Degaussing Wand, which ensures that the field inside the cylinder is as close as possible to zero before critical measurements are made.

4. TLMS-C100/TLMS-C200 Capped-End Magnetic Shields Features



Figure 1. TLMS-C100/TLMS-C200 Capped Magnetic Shields

Key

1. Three-layer lid
2. Earth grounding stud
3. Cable slot
4. Inner shield layer

The Capped-End Magnetic Shields have a three-layer lid that covers the inner chamber to provide additional shielding.

Each layer of the shields contain a slot to accommodate a cable for the equipment placed into the shield.

5. Magnetic Shields Operation

5.1. Installing TLMS-C100 and TLMS-C200

When setting up the TLMS-C100 or TLMS-C200 Capped-End Magnetic Shield, orienting the long axis of the shield in the direction of the smallest field component (typically close to east/west in normal Earth's field) is preferable but not compulsory to achieve best shielding. The capped ends mean there is additional shielding at either end of the sample chamber so the shield is less reliant on orientation.

Note: The Capped-End Magnetic Shield has a grounding pin that should be connected to ground to reduce electrical noise.

5.2. General Recommendations of Usage

When using the shield combined with a magnetic sensor inside to take measurements (e.g. offset of the sensor, or remanent magnetisation of a sample), it is recommended to place the magnetometer in the centre of the shield to prevent interferences from the mumetal layer.

The shields should not be exposed to strong DC magnetic fields as these may cause magnetisation of part of the mumetal layers, giving the shield a DC offset.

Mechanical shocks on the mumetal layers are also best avoided as mechanical stresses can cause local magnetisation of the shield. The outer aluminium enclosure is there to prevent these as much as possible.

In the event the shield becomes magnetised, it is recommended to degauss it using Bartington Instruments Degaussing Wand.

6. Troubleshooting, Care and Maintenance

The periodic demagnetisation (degaussing) of the shield is recommended, and should be done if the shield is exposed to a strong DC magnetic field, or subject to mechanical shocks. Use the Degaussing Wand available from Bartington Instruments for this operation.

Periodic cleaning is not normally required. If the system becomes soiled and cleaning is necessary, use a damp cloth to clean the outer surfaces.

7. Storage and Transport

The shields should be appropriately packed before transportation so as to reduce the risk of mechanical shocks.

The shield should also not be exposed to strong field during transport or storage. If storing the shield over long period of times in the Earth's field, it is recommended to degauss it when used again to remove any small magnetisation which may have been acquired over time.

Note: Avoid exposing this instrument to shocks or continuous vibration.

8. Disposal

This product should be disposed in accordance with local regulations for the disposal of metal products.

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