

**DIVERSE**

**MAGMETER MF300B+**

**MAGNETIC FLUX METER**

**OPERATING INSTRUCTIONS**

**2008**



**DIVERSE** *MagMeter type MF300B+*

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**MANUFACTURED BY:-**

**DIVERSE TECHNOLOGIES  
CAMBRIDGE  
ENGLAND**

**DIVERSE** *MagMeter type MF300B+*

## PREFACE

Thank you for purchasing MF300B+ flux meter. Before using the instrument, please read these instructions carefully. If you are uncertain about any aspect of its operation, please contact Diverse at Cambridge, England CB22 5EW, or email us for clarification at [sales@diverse-technologies.net](mailto:sales@diverse-technologies.net)

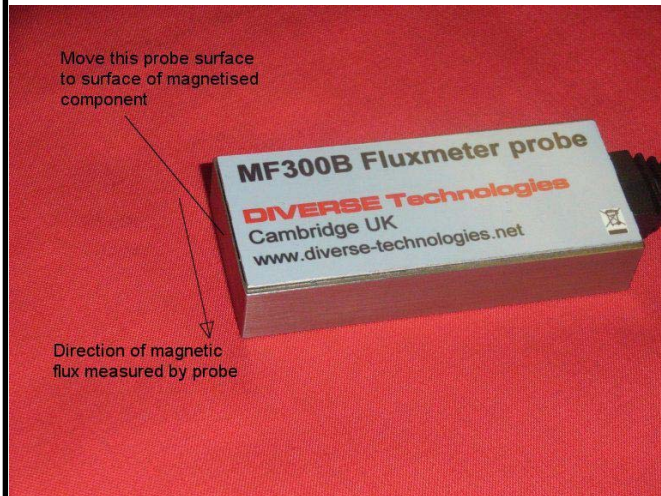


Fig 1. MF300B+ probe

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## INTRODUCTION

The MF300B+ Magnetic Flux Meter is used to measure the magnetic flux density within steel components. The meter can be used to measure static (DC) magnetic flux in any direction along the surface of the component. The measured values are displayed in either mT (milliTesla), T (Tesla) or G (Gauss).

The MF300B+ is supplied with a probe which is able to measure the magnetic flux density within steels. When the probe is placed on the surface of a steel component, the magnetic flux within the component is sampled to provide the measurement ( fig. 1). The orientation of the probe on the surface indicates the direction at which the flux density was measured. The probe can be used on flat surfaces or curved surfaces with a minimum radius of curvature of 50 mm.

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It is important to measure the magnetic flux density within steel components prior to carrying out Magnetic Particle Inspection. Procedures and standards such as BS6072, written to perform this type of non-destructive test, often state that a particular flux density such as 0.72 Tesla is required. Magnetic probes, such as gauss meters, which measure the magnetic field in the air above the surface of the component do not indicate the value of magnetic flux within the material to be inspected. The MF300B measures the peak static magnetic flux density regardless of the magnetisation technique. Therefore the component can be magnetised using AC or DC electric current, magnetisation coils and yokes or permanent magnets and the probe will measure the correct peak value.

An RS232 output for connection of the Magmeter to a computer is available as an optional extra to the MF300B+. Software is included with this option which enables the magnetic flux

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measurements to be input to most spread sheets.

The MF300B+ Magnetic Flux Meter is supplied in a carrying case together with a Flux probe. Versions which use the RS232 output are supplied with a lead for connection to a computer.



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The MF300B+ Magnetic Flux Meter is calibrated a few days before delivery and a calibration certificate is supplied.

The unit requires 4 AA cells which should be installed in the battery compartment on the rear of the housing.

The Flux probe supplied with the meter is of a robust design suitable for the measurement of magnetic fields in workshops and laboratories. The probe will, however, be damaged, if it is subject to mechanical stresses or forces.

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## OPERATION

The Magmeter has 4 keys:

- power
- ☑ tick
- ↑ up
- ↓ down

### Step 1 Plug in the Flux Probe

### Step 2 Power On/Off

Hold the probe away from any magnetic surface and switch the unit on by pressing the power key. The display will show a flux value on the second line and a peak value on the third line.

### Step 3 Preparation

Hold the probe away from any magnetic surfaces and press the ☑ key. The instrument will display 'zeroing'. Once this is complete the instrument will display 'ready'.

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## Step 4 Take Measurement

Press the  key. A progress bar will be displayed. Move the probe until it is in good contact with the surface where a measurement is required. The measurement surface of the probe should lie on the surface and the long dimension of the probe should point in the direction where the measurement is required. See fig. 1.

Once the display stops flashing, it will indicate the peak value of flux density measured by the probe and the integrated value of flux density. Note that the value displayed on the second line will rise as the probe is taken to the measurement surface but will drop back if the probe is removed before the progress bar has completed.

A new reading can be made by repeating steps 3 and 4.

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## Step 5 Changing range

Press  to change the measurement units, mT (milliTesla), Tesla (T) and Gauss (G) can be selected.

## Step 6 Switch off

Press and hold the  key to switch the unit off when no further measurements are required.

## Step 7 Serial Output

Readings from the MF300B+ can be output to a computer via the serial link.

Plug in the MagMeter using the cable provided, either RS232 or USB.

Values can be output from any of the display options by pressing the tick key for less than two seconds.

## Low Battery

If the MF300B+ displays the legend

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"Low battery" the batteries are low. If you have purchased the rechargeable unit then connect the charger and wait at least 30 minutes before using. Wait 8 hours for full recharge. If you have the dry cell unit replace with 4xAA alkaline cells.

*Never use the battery charger with conventional dry cell batteries.*

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## SOFTWARE

If you have chosen the serial interface version, you should install the software on your PC from the CD supplied. The Software works with all versions of Windows 95, 98, XP and Vista, and produces CSV files suitable for input to word processors or spreadsheets.

Free updates to the logging software are placed on our web site:

<http://www.diverse-technologies.net>

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## SPECIFICATION MF300B

Units: mT (milliTesla) T (Tesla) or G (Gauss)

Range: 0 - 1.99T, resolution 10mT.

Zero: Zeroed at the start of every measurement and actively between measurements.

Probe: Active area 21 x 7 mm

Power: 4x AA (R150) Alkaline Cells

Accuracy +/- 5% of full scale, in the range 0.3 to 1.3 Tesla when used on mild steel.

Operating Temperature: 0C to +40C

Surface: The probe can monitor the magnetic flux within flat surfaces, or curved surfaces with a radius as small as 50 mm.

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## CALIBRATION & REPAIR

The MF300B+ and probe is supplied with a calibration certificate. It is recommended that the unit is returned to the supplier annually for recalibration.

If the MF300B+ requires repair, the instrument should be returned to:

Diverse Technologies & Systems Ltd.  
Zeromag House, 46-48 Whittlesford Rd  
Shelford, Cambridge CB22 5EW  
England, Tel: +44 (0) 1223 84 44 44

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## LIABILITY

Diverse Technologies accepts no responsibility for the consequential losses arising from the ability or inability to use the equipment supplied.

The limit of warranty is the repair or replacement of any faulty components, directly attributable to manufacturing defects, arising during the period of 12 months following purchase. This does not include damage resulting from incorrect operation of the unit.

Designed and manufactured by:-

**Diverse Technologies & Systems Ltd.**

**Zeromag House  
46-48 Whittlesford Rd  
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**<http://www.diverse-technologies.net>**

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## Disposal and Recycling

This instrument should be disposed of in a responsible manner to allow the components within it to be recycled.

The wheelie bin symbol shown here and on the product means that the product is classed as Electrical and Electronic Equipment and should not be disposed with other household or commercial waste at the end of its working life.

The Waste of Electrical and Electronic Equipment (WEEE) directive (2002/96/EC) has been put in place in the EU to recycle products using the best recovery and recycling techniques to minimise the impact on the environment, treat any hazardous substances and avoid landfill.

Business users should ensure that this product is not mixed with other commercial waste for disposal.



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