Magmeter MF300H+

A robust magnetic field meter for industry

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Applications

- Magnetic field measurement
- Logging of magnetic field
- NDT
- Magnetic test bench
- Magnetic arc blow
- High current measurement

Features

- Average, RMS and Peak (absolute & bipolar) modes
- Multiple units of measurement.
- Rugged stainless steel probe
- Magnetic Test Bench mode
- Built in data logger
- Continuous bar graph display of level
- Remembers previous settings
- High current measurement mode
- Auto power off, Auto Zero facility
- Certification to NPL traceable standard
- Supplied with a protective carrying case

Overview

The Diverse MF300H+ hand held, battery operated Magnetic Field Meter with a rugged stainless steel Hall effect probe suitable for both laboratory and workshop use.

The meter uses a membrane key pad and a digital display which makes it simple to operate but at the same time offers the ability to do complex measurements.

A wide range of settings, measurement modes and units can be set by the user through the menu driven user interface. The operating modes allows magnetic measurements in most industrial and laboratory applications. Auto zero can be requested at any time by the press of a single key.

Measurements of magnetic fields together with the selected units and a linear scale are displayed on the instrument. Operating modes are average, absolute peak, bipolar peak and true RMS. There is a built-in data logger that can collect 100 samples in the chosen measurement mode and at a selectable rate. The results can be viewed on screen or optionally downloaded via the serial RS232/USB interface. Software for use with the meter is provided with the serial option which enables data to be saved and entered in spreadsheets.

There is a built in mode for NDT magnetic test bench (MTB) work. The MTB mode switches the instrument to the correct range and mode and compares the field level with a pre-defined level, typically 2400 A/m. If the field is below this then <LO> is displayed otherwise <OK>.

The high current measurement mode allows calibration of the setup and measurement of the current in all the measurement modes. The instrument will work to a current of 250kA, typically found in aluminium smelting plant.

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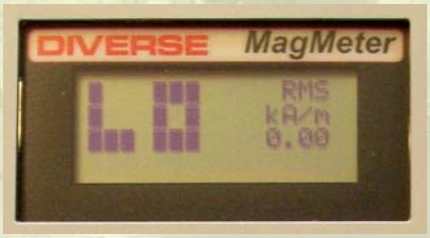
About Magmeter MF300H+

The MF300H+ series gaussmeters use a microprocessor to control the data collection, calibration, display, units, modes and logging features. The range, which include a flux meter and a Ferrite meter have become popular with engineers and technicians around the world. One of the reasons for its success is its tough stainless steel probe which makes measurement simple and reliable. This is in contrast to other meters which have delicate probes that are easily broken and expensive to replace.

The MF300H+ instrument has a simple to use key interface to navigate through the various modes, ranges and units, and once the instrument has been set to a the desired mode and units it remembers them for next time. The MF300H+ layered menus provide the route to set its various modes of operation. A new mode is the bipolar peak mode that tracks both positive and negative field excursions.



For those involved in NDT, it has a novel magnetic test bench mode to simplify NDT tests to BS or ASTM Standards. In this mode, the MF300H+ automatically sets to RMS, midrange and kA/m. The user sets the target kA/m and the instrument displays <OK> or <LO> in large letters.

All the features of the MF300H+ are built into its microprocessor allowing it not only do the measurements but also track the instrument performance. The instrument is provided with a calibration certificate as standard, specifying the calibration of the instrument to NPL traceable standards. The built in software optimises the gain settings across the ranges.

For measurement of high currents, there is a set up scheme to set the probe a known distance and orientation from the conductor. Once set, the instrument displays the current to 250kA directly. This measurement can use any of the normal measurement modes.

The optional serial software provided with the MF300H+ provides USB and RS232 interface allowing readings to be read and recorded on a PC. The software will run on Windows XP /Vista/7. The data is saved in CSV format for import to standard spreadsheets.

In logging mode, magnetic field measurements are recorded together with the time and date. Readings can be requested by pressing a key on the meter or directly from the computer keyboard. Alternatively, readings can be taken automatically at regular time intervals.

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Magmeter MF300H+ Applications

The Magmeter MF300H+ can be used in a wide variety of field measuring applications e.g.

Weld preparation

After fit up the 2 parts to be welded have a small gap between them of a few mm. The requirement is for a magnetic meter measuring in gauss that is small enough to be used in this gap; the MF300H+ is the tool of choice for this application. The welding environment is tough, with users wearing leather gloves and any tool needing to survive use in a heavy engineering context. Diverse Magmeters are tough and have been well proven by industry.

Degaussing

The degaussing process has essentially 3 stages: firstly the field must be assessed to determine whether the process is required. The MF300H+ has high sensitivity, and in peak mode can find the highest field excursion. Secondly the strength of the degaussing field can be assessed - here the bipolar peak detection mode is ideal. Finally, the remanent field can be assessed after the process.

NDT

The NDT process using magnetic particle inspection requires that samples are magnetized to a defined level - if this level is not met there is a danger that the sample has insufficient magnetism to retain the particles in any small cracks. The normal process here is to have a minimum field requirement is to measure in kA/m as a RMS figure. The MF300H+ can be used to do this measurement. However it has test bench mode in which the required field is set and the instrument provides a simple go/no go indication.

Magmeter is used for NDT work on oil and gas pipelines, train and track maintenance, NDT labs and by both military and civilian aircraft maintenance crews for NDT testing.

Health and Safety

There has been concern in recent years about exposure of people to high EM fields and this concern is being reflected in more demanding testing in an attempt to reduce the exposure. The MF300H+, measuring directly in Tesla or milli Tesla can be used to determine average, peak and RMS exposure.

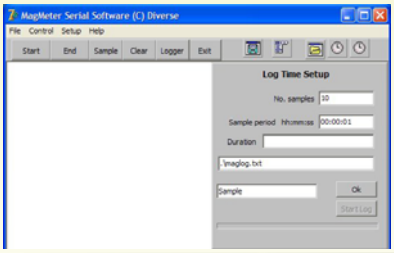
Motors Solenoids and loudspeakers

Often these applications require measurement along a central axis. The Magmeter axial probe option provides all the functionality of the instrument with axial measurement.

General purpose

There are many magnetic measurement requirements in industry and the laboratory and the MF300H+ is used a good reliable tool for most measurements. Its wide range of operation and simple controls allow fast and dependable measurement.

It is sometimes useful to track magnetic fields over time. The MF300H+ can do this in 2 different ways. First it can be used stand alone to log up to 100 measurements which are stored in its memory for later assessment or, with the USB/serial option can be download to a PC. A second mode is to use the logging facilities in the serial software option to collect essentially unlimited samples which are stored immediately on the PC. In this mode, there is a software switch on the instrument to disable the auto power off facility.



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Magmeter MF300H+ Specification

Manual Ranges: (Full scale)	Low 199.0 G (0.019T) Medium 1999G (0.19T) High 19990G (1.9T)
Auto range:	Automatically adjusts range with field
Selectable units:	Tesla, Gauss, Oersteds, kA/m, kA at set range
Measurements modes	Average, absolute peak, bipolar peak, true RMS
Display	4 lines of 16 characters Shows value, units, mode, range and bar graph
Internal data sample rate	500 per second
Accuracy	1% full scale at 20C
Probe size	2.2mm x 6.5mm 100mm long
Non destructive testing	Magnetic Test Bench mode
Logging:	100 Samples, inter sample time 1 -1000 seconds
Log review and clear:	User can scroll through the logged data in groups of 4 and zero the whole database
Averaging	Data collection and RMS averaging is set at default 16 samples. User can select from 1, 4, 16, 64 and 256
Bar graph	Continuously shows relative reading. Mono or bipolar mode
Zeroing	Automatic to current field Calibration zero recall for high ambient fields
Probe cable length	1.5m typical
Calibration:	Calibrated by Diverse to NPL traceable standard. 12 month recalibration required for ISO9000 quality standard.
Power:	4 standard AA cells , typical lifetime 12 months. Continuous use 30 hours
Low battery:	Automatically detects and warns user
Instrument size:	165 x 100 x 50mm
Weight in case:	1.1kg
Environmental:	10 - 40C operating, 0 - 80C storage
Humidity	0-90% non condensing
Display update rate:	0.3 seconds
Warranty	12 months