

TP002HS
TRANSVERSE HALL PROBE HIGH SENSIBILITY
OPERATING MANUAL



VERSION 1.0 - 2012

APPLICATIONS

- Measurement of the earth's magnetic field, navigation.
- Detection of fields from power lines.
- Current measurement.
- Magnetic signatures.
- Material and package inspection.
- Residual Field measurement (shielding effectiveness).

INTRODUCTION

The TP002HS is an active semiconductor Hall element which incorporates a ferrite focusing magnetic circuit. This magnetic circuit focuses the magnetic flux experienced by the probe in the Hall element to offer a significant boost in sensitivity.

The Hirst Magnetic Instruments Ltd TP002HS is a high sensitivity Hall probe for use with Hirst Magnetic Instruments Ltd. GM07 and GM08 Gaussmeters.

It allows measurement of weak magnetic fields, up to 100 μ T. The probe can be used for any application where the sensitivity and stability of conventional magnetic field detectors are too low. Ex: Measuring of Earth's magnetic field or ferrous objects at greater distances.

TP002HS Compatibility with GM07 and GM08 models

The TP002HS can be used immediately with Hirst Magnetic Instruments Ltd GM07 and GM08 Gaussmeter models with serial numbers: GM07-0924 and GM08-0691 and above.

If you wish to use a GM07 or GM08 with an earlier serial number, please contact Hirst Magnetics at sales@hirst-magnetics.com to check compatibility. Please include TP002HS compatibility as a reference, and include your GM07 or GM08 serial number.

USING THE TP002HS HALL PROBE

The TP002HS is compatible with Hirst's GM07 and GM08 range of meters. It is both versatile and simple to use, with a few simple steps to getting going.

NOTE. Always plug in and disconnect the probe with the power to the meter switched off.

There are three methods available for measuring with the probe, dependent on whether absolute/ relative measurements are needed and the zeroing technique chosen.

1. Insert the probe, power on the meter and select the FUNCTION required for measurement. E.g. DC, AC, etc.

FOR ABSOLUTE MEASUREMENTS (METHOD1)

2. Perform an AUTOZERO in a low Gauss environment. This will ensure the meter is zeroed correctly before measurements are taken. (e.g. Hirst's ZGC002 Zero gauss chamber, oriented orthogonally to the earth's magnetic field.)

3. Apply the field of interest and select the correct range for the measurement.

FOR RELATIVE MEASUREMENTS USING A NULL FUNCTION FOR ZEROING (METHOD2)

2. Perform the AUTOZERO (UTILITIES MENU) inside a zero gauss chamber.

3. The probe should then be removed from the zero gauss chamber and then a NULL applied on the meter in the relative field to zero the meter.

4. The desired field can now be applied and probe will now read the field relative to the NULLED field.

If "Near Limit" is displayed then the meter is too close to its power supply rails for an accurate measurement to be taken. A smaller NULLED field must be used or method 2 must be used for the zero.

FOR RELATIVE MEASUREMENTS USING AUTOZERO FUNCTION FOR ZEROING (METHOD3)

For lower field readings the AUTOZERO should be performed in the relative field, this method should be used on high gain ranges with a large relative field. For example, measuring very small fields relative to the earth's magnetic field.

2. Perform the AUTOZERO (UTILITIES MENU) in the lower relative field to zero the meter.

3. The desired field can now be applied and probe will now read the field relative to the zeroed field.

NOTE: The nulled field + relative field + reading (total absolute field) should not exceed +/- 100uT.

HOLD BUTTON

The hold button performs the standard function as described in the GM07/08 manual.

ENVIRONMENT

Avoid high strength AC and DC fields even with the probe and meter un-powered, as these can damage internal circuitry and produce a permanent self-magnetisation of the sensor and electronics.

SPECIFICATION

When operating with the GM07 and GM08, the TP002HS automatically enables 3 ranges of operation.

0 - ± 29.99 mT (milli Tesla)
0 - ± 2.999 mT (milli Tesla)
0 - ± 299.9 μ T (micro Tesla)

0 - ± 299.9 Gauss
0 - ± 29.99 Gauss
0 - ± 2.999 Gauss

0 - ± 299.9 Oersted
0 - ± 29.99 Oersted
0 - ± 2.999 Oersted

0 - ± 24.00 kA/m (kilo Amps per metre)
0 - ± 2.400 kA/m (kilo Amps per metre)
0 - ± 240.0 A/m (Amps per metre)

Bandwidth	0 to 1 KHz (-3 dB)
Operating Temperature	-40 to +85 DegC
Length of detection coil	22mm
Analogue output	+/- 3V full scale

This product complies with the Low Voltage Directive (LVD) and Electromagnetic Compatibility (EMC) directive.

