

Quick Start Guide

Single Axis Gaussmeter Model: GM09-1

A single-axis gaussmeter featuring touch-screen interface and rechargeable Li-ion battery compatible with the extensive range of Hirst Hall sensor probes. Built-in "App" modes ensure standard tests and measurements can be carried out with ease and minimal effort. Data-logging features allow the retrieval of data using a simple USB interface, no additional software is needed as the GM09 appears as a USB mass storage device.



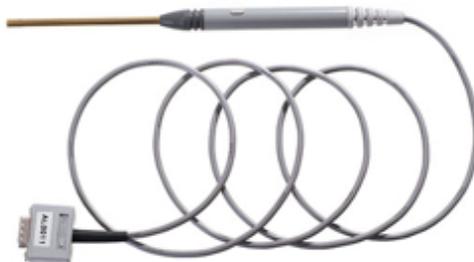
GM09, Single axis gaussmeter with touch screen display

How to use the GM09

The GM09 Handheld Gaussmeter and Probe is used to measure Magnetic Flux Density or Magnetic Field Strength.

There are two key parts to the GM09:

1. The Probe that senses the Magnetic Field and produces an electrical signal which uses a Hall effect element.



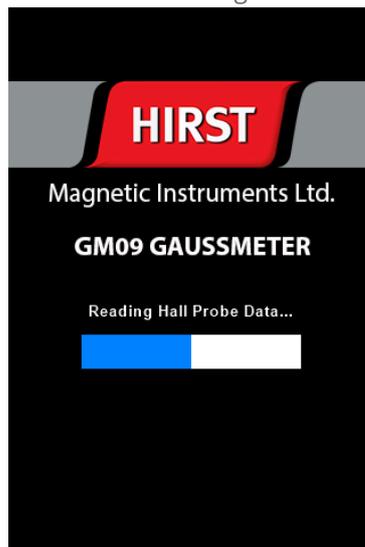
2. The GM09 Instrument itself, that then processes these electrical signals to display measurements that the user can read off the display or capture.



Above is the top of the GM09 showing the Power On/Off button, an LED indicator (solid Blue when the unit is on and not illuminated when the GM09 is turned off) and the Hall Probe Connector. Plug the probe into the connector above and power on the GM09 by pressing the button for >1 second. The Blue power on indicator LED slowly flashes when the unit is in Sleep mode (to save power), simply touch the screen to turn the GM09 back on.

Start up sequence

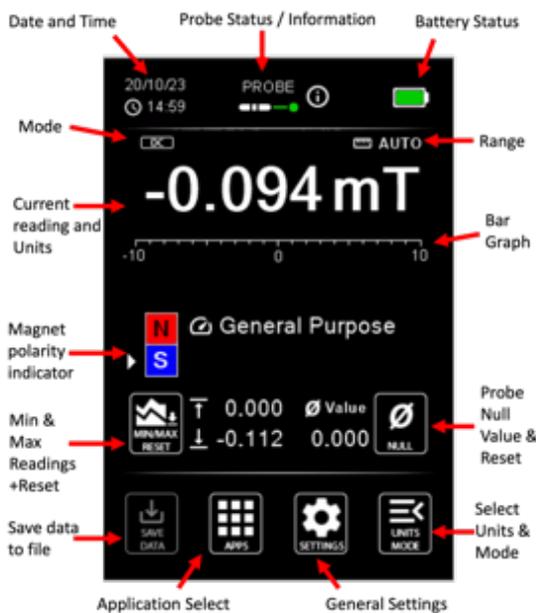
To power on the GM09 - press and hold the Power On/Off button and the GM09 will begin its start up sequence as below



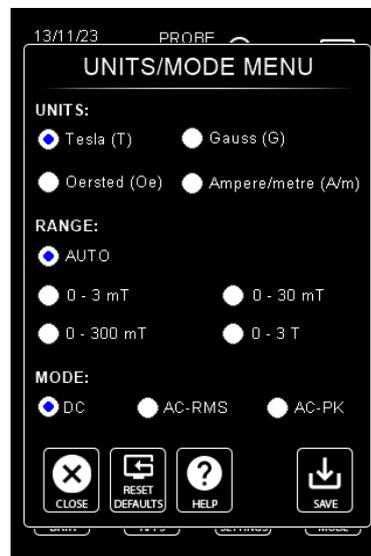
Once the start-up sequence is completed, the GM09 will display the main measurement screen, on first start up this will be the General purpose gaussmeter mode. However, the GM09 will remember its previously used settings. To get back to General purpose mode from a given application simply select this from the menu when displayed.

The GM09 features a clear 3.5" multi-colour touch screen with intuitive menus and on-screen help so its easy to use without resorting to a manual. In addition, on help screens there are QR codes allowing the user to find out more information about a given measurement or feature of the GM09 using a smart phone or tablet.

Below are some of the basic screens of the GM09



General measurement screen



Measurement units, range and mode



Probe information and calibration status



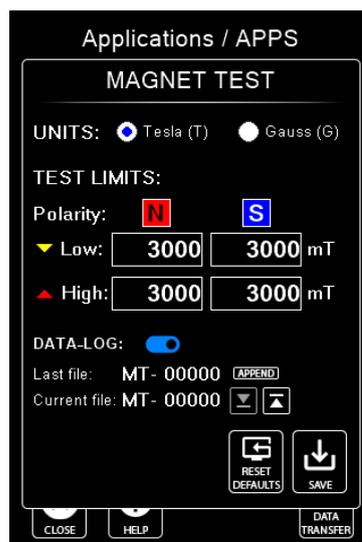
Application selection with setting and help

Applications

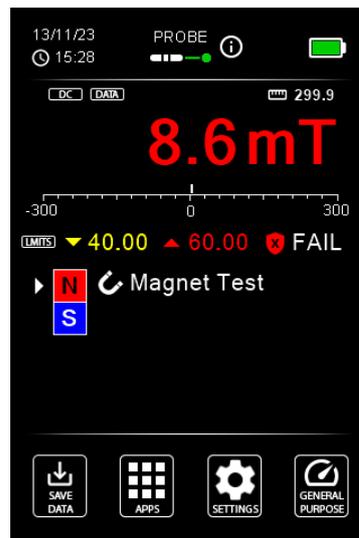
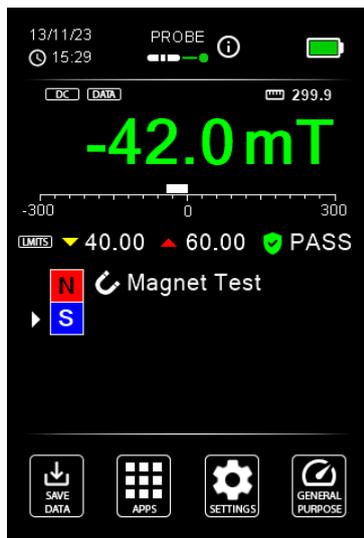
To make using the GM09 as easy as possible it contains a number of Applications modes to set the GM09 up for specific measurement tasks including

- o Magnet testing - pass/ fail within user defined bands with polarity.
- o Magnetic Field testing – for standard and stringent safety levels or user defined pass / fail criteria.
- o Residual magnetism testing – for standard levels or user defined pass / fail criteria.
- o Fit-to-Fly testing for magnetic materials against IATA (and FAA guidelines), this requires a High Sensitivity probe.
- o Food Magnet Extractor testing with standard settings (8, 10, 12 kG) plus user defined pass / fail criteria.
- o Occupational safety mode testing based on 1998 ICNIRP guidelines - DC testing using standard probes and using high sensitivity probes for AC fields up to 6kHz.

Each App contains settings, help and information as below (if an application is not selectable or greyed out this means that the probe connected is not appropriate for the test type)



Once the settings are saved the GM09 is set up for the Application in this case Magnet Testing, to save data press the probe button or the Save Data button on the GM09 display.

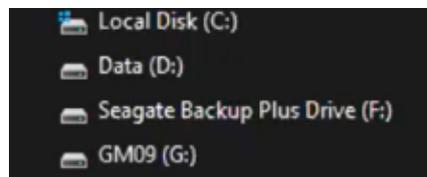


Saved data can be accessed by connection to a computer or device via the USB-C cable as described below.

Communications and data access

The GM09 features a USB mass-storage interface to allow the downloading of measurements data to computers or USB devices. Simply connect the GM09 to any computer, phone or device that can read a standard USB memory flash drive and press the Data Transfer button on the Application selection screen. Note If the button is greyed out or not selectable this is because the GM09 is not connected to the computer via the USB-C cable. Note data can be accessed from the GM09 even if not connected to a probe (useful if the probe is mounted in a test rig), by connecting the GM09 to a computer via USB and powering up the GM09.

This is how the GM09 connection will be displayed on your computer or device :



The GM09 also includes a real-time clock and time stamped measurements can be stored as required. The stored data can be download via the USB mass storage interface. Data is stored in a .CSV format file giving import capabilities into most software packages.

MF-00000														
GM09 GAUSSMETER Data Log														
#Creation date: 2023-12-18 / 16:17:47														
#Gaussmeter SN: GM09-9001														
#Probe Type: Transducer / Probe SN: 12141 / Probe Multi: 0.000000000 mT (0.000000000 G)														
#Gaussmeter Calibration: 11/10/23 - 14.54 / Probe Calibration: 3/11/19														
#APP Selected: MAGNET TEST														
#														
#Timestamp (s)	Date	Time	Value (mT)	Value (G)	Priority (mT)	Magnet N Limit Low (mT)	Magnet N Limit High (mT)	Magnet S Limit Low (mT)	Magnet S Limit High (mT)	Magnet N Limit Low (G)	Magnet N Limit High (G)	Magnet S Limit Low (G)	Magnet S Limit High (G)	Pass/Fail
176894887	2023-12-18	16:17:47	-54.289	-542.889	0	40.000	60.000	40.000	60.000	400.000	600.000	400.000	600.000	PASS
176894878	2023-12-18	16:17:58	-49.016	-490.156	0	40.000	60.000	40.000	60.000	400.000	600.000	400.000	600.000	PASS
176894880	2023-12-18	16:18:00	-49.953	-499.534	0	40.000	60.000	40.000	60.000	400.000	600.000	400.000	600.000	PASS
176894882	2023-12-18	16:18:02	-54.358	-543.580	0	40.000	60.000	40.000	60.000	400.000	600.000	400.000	600.000	FAIL
176894884	2023-12-18	16:18:13	-59.911	-599.113	0	40.000	60.000	40.000	60.000	400.000	600.000	400.000	600.000	PASS

The GM09 retains its last setting when powered off - so once set up the unit can be powered on and is ready to go.

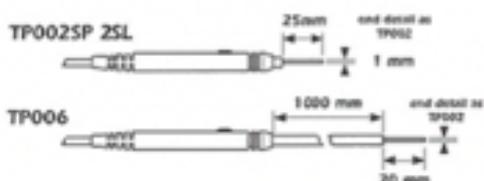
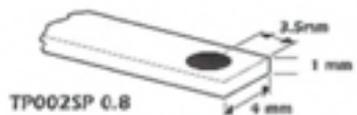
Charging the GM09

The GM09 is equipped with rechargeable Li-ion battery with a 3500mAh USB-C chargeable (computer or mains charger provided) battery life >4-hour use with sleep mode and auto power-off. The GM09-1 is supplied with a USB-A to USB-C cable to allow connection to computers for either data transfer or charging. The GM09-1 is not supplied with a mains charger but many third-party chargers can be used. The power supply / mains USB charger must be a BC1.2 type, this means the D+/D- pins of the USB port are shorted together. Most Apple iPhone / iPad compatible mains chargers can be used as they are BC1.2 type.

Accessories and options

The GM09 gaussmeter uses standard Hirst gaussmeter probes

- AP002 Standard axial probe (1.5m cable length)
- AP002HS High Sensitivity Axial probe (1.5m cable length) -optional
- TP002 Standard Transverse Hall probe (1.5m cable length)
- TP002SP0.6 Extra slim Transverse Hall probe (1.5m cable length)
- TP002HS High Sensitivity Transverse Hall probe (1.5m cable length) - optional
- TP002R Rugged Transverse Hall probe (1.5m cable length)



Transverse Probes (above)



Axial probes (above)

Warranty and Calibration

Supplied calibrated with 1 year warranty. A calibration required is every year to maintain the highest levels of performance The GM09 is calibrated to standards traceable to the National Physical Laboratories (London UK).



Hirst Magnetic Instruments has been providing world class solutions for 60 years in magnetics and magnetic measurement. Hirst manufacture precision hand-held gaussmeters, large industrial magnetiser machines, as well as production line equipment for characterising high performance magnetic materials.

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