

## GF603 Three-Axis Fluxgate Magnetometer

- Resolution up to 0.1nT
- DC/AC Measurement Mode Switch
- Real-time Spectrum Analysis
- Small-size Probe (24x24x50mm)



### Description:

The 2025-Version Three-axis Fluxgate Magnetometer GF603, made by COLIY, has the excellent ergonomic design with the latest electronic technology, and it's one of best choices to measure low-intensity magnetic field. This handheld fluxgate magnetometer can be used in geomagnetism detection, wrapped detection, traffic monitoring, measuring residual magnetism, low-intensity magnetic field measurement, etc.

The key feature of the 2025-Version Magnetometer GF603 is that the size of the probe is reduced to only 24x24x50mm, which is only 1/4 of the size of the old version, and it is one of the smallest high-performance fluxgate probes at present, which can be measured in a small space. Magnetometer GF603 adopts a high-precision 24-bit ADC chip, which greatly improves the magnetic field resolution. High performance circuit supports the measurement resolution of 0.1nT within the full measurement range. The power consumption of the whole machine is reduced by 1/4. Magnetometer GF603 boasts with an industrial class 3.2 inches touch panel display that enables customers' instantaneous and simultaneous measurement results [Max/Min/ Peak/ Hold/ Alarm/ Polarity, XYZ axis and vector of Magnetic Flux Density, Declination/Inclination (D/I), Trend Graph and Real-time Spectrum Analysis (with model

GF603S) etc.].

Magnetometer GF603 can be used to detect DC magnetic field in DC measurement mode and AC magnetic field in AC measurement mode respectively: GF603 allows DC measurements with a basic accuracy of 0.25%, resolution of 0.1nT and AC measurement with a basic accuracy of 1% and frequency response range of DC~ 2kHz. Meanwhile, Magnetometer GF603S has the function of real-time spectrum analysis within the frequency range 15Hz- 2kHz.

In addition, Magnetometer GF603 has passed the CE certification and EMC (Electromagnetic Compatibility) test.

<b>Parameter Comparison</b>		
<b>Product Version</b>	<b>2025-Version</b>	<b>2020-Version</b>
Probe Size	24x24x50mm	32x32x107mm
Sampling ADC bits	24 bits	18 bits
Measurement Resolution	0.1nT	1nT
Frequency Response	DC - 2kHz	DC - 1kHz
Power Consumption	Reduced by 1/4	High
Max Range	1.5mT	1mT
Probe Cable's Length	Up to 300m	Up to 50m

<b>Features</b>	
<ul style="list-style-type: none"> <li>● GUI Operation System</li> <li>● 3.2 inches color touch LCD</li> <li>● Full 5 display digits</li> <li>● Max/Min/Hold Function</li> <li>● Display trend graph &amp; Alarm</li> <li>● Display XYZ axis and vector</li> <li>● Display R, D, I values</li> <li>● S or N Polar indication</li> </ul>	<ul style="list-style-type: none"> <li>● Range: <math>\pm 100\mu\text{T}</math> ~ <math>\pm 1500\mu\text{T}</math></li> <li>● DC Basic Accuracy: 0.25%</li> <li>● AC Basic Accuracy: 1%</li> <li>● Finest resolution: 0.1nT</li> <li>● DC/AC measurement mode switch</li> <li>● Frequency response: DC- 2kHz</li> <li>● [GF603S] Real-time spectrum analysis</li> <li>● Small-size Probe (24x24x50mm)</li> </ul>

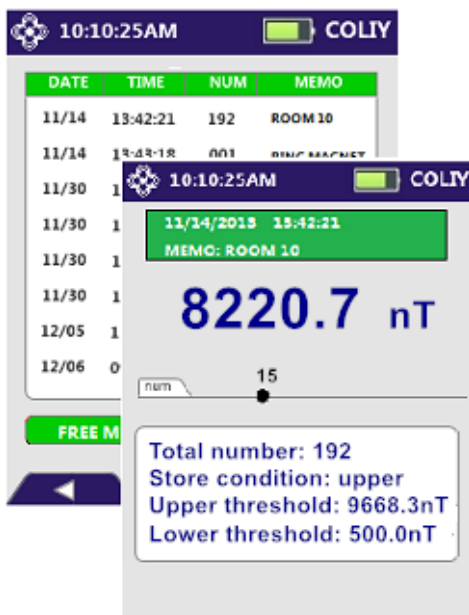
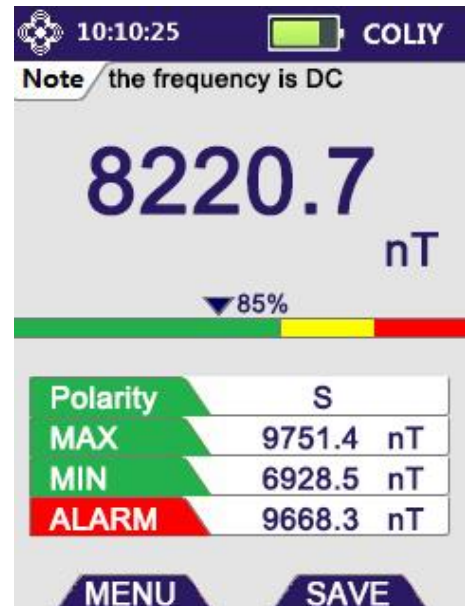


## GUI Operation System

With the handheld instrument operating system (GUI Operation System) developed by COLIY, it's very efficient and convenient for operators to choose menu by touching, to operate magnetometer.

## Display Style

Color LCD shows magnificent data: time, value, polarity, Max, Min, note, Alarm, XYZ axis and vector of Magnetic Flux Density, Declination/Inclination (D/I), and trend graph.



## Smart Record and Review

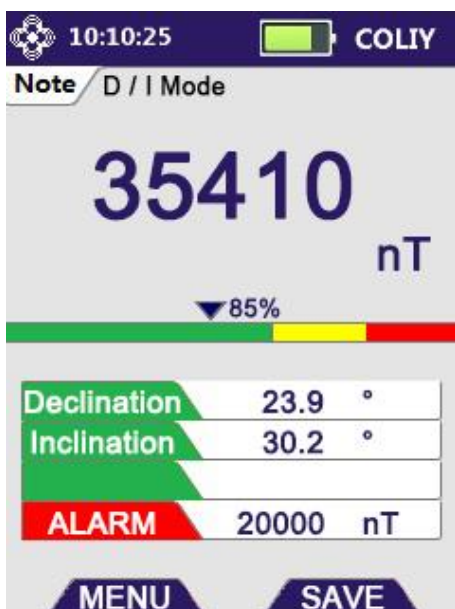
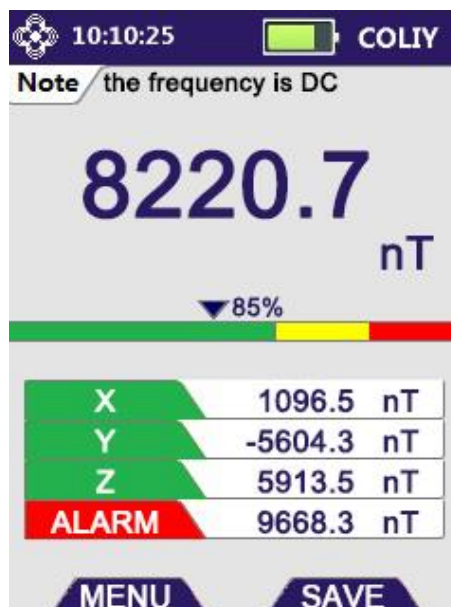
Detailed record list, operators can use MEMO to memorize any specification of every measurement.

Click any record list, operators can review all the information recorded as screen shots and add note to every item.

## XYZ Display Mode

GF603 has many display modes to be chosen: Standard Mode, XYZ Mode, D/I Mode, Graph Mode, Polarity Mode and Spectrum Mode.

And XYZ Mode shows vector value, XYZ component values and alarm value.



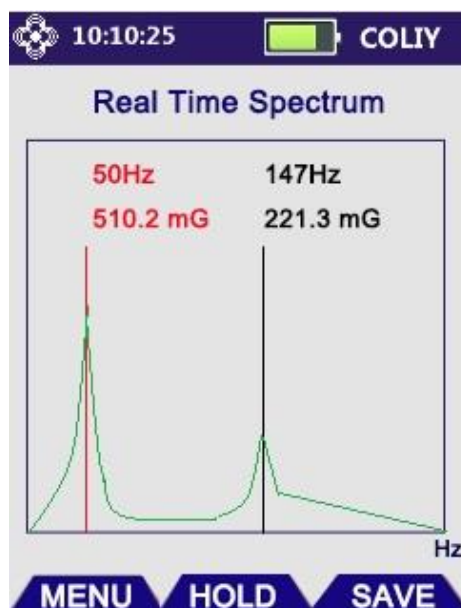
## D/I Display Mode

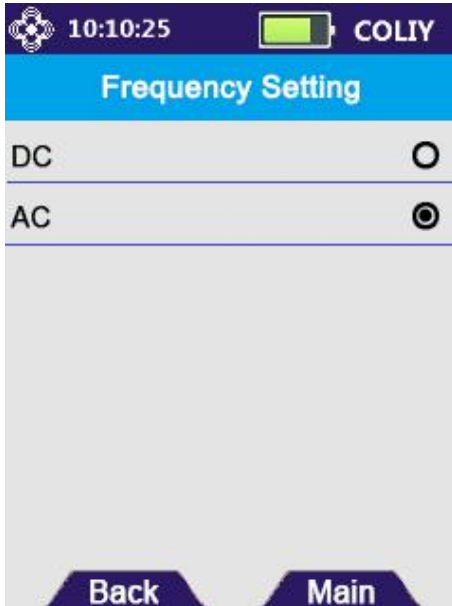
Declination is the angle that between the Z axis and the projection of the field vector onto the XZ plane. Inclination is the angle that between the field vector and the XZ plane.

And D/I Mode shows Resultant (vector value, R), Declination (D) and Inclination (I) values.

## Real-time Spectrum Analysis

GF603S has the function of real-time spectrum analysis within the frequency range 15Hz- 2kHz.



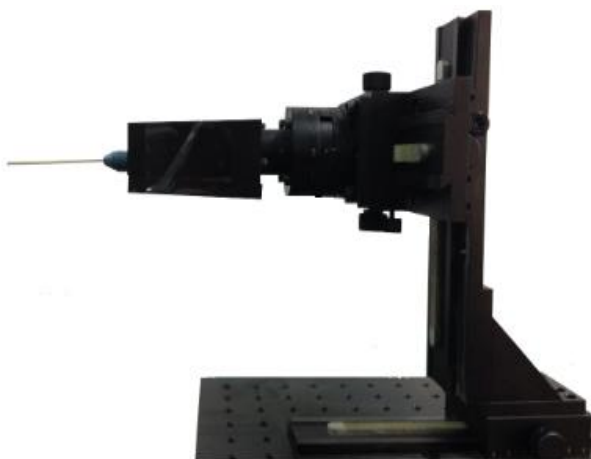


## AC Measurement Mode

GF603 can be used to detect DC magnetic field in DC measurement mode and AC magnetic field in AC measurement mode respectively, and the frequency response range is DC~2kHz.

## Small-size Probe

The size of the 2025-Version GF603 probe is reduced to only 24x24x50mm, 1/4 of the previous probe volume (the size of the 2020-Version is 32x32x107mm). And the smaller probe can be measured in a small space.

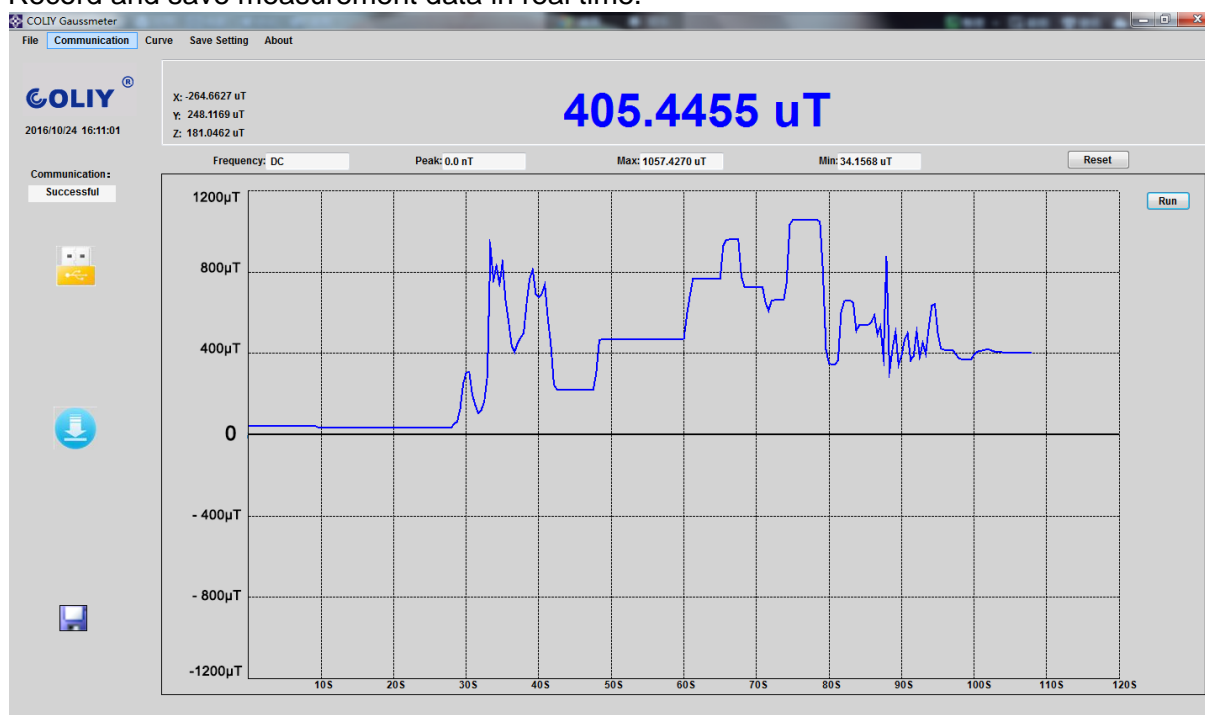


## 3D Movement Platform

3-Direction Precision Movement Platform, is made of non-magnetic material. Users fixed the probe on the bracket front-end, and then manually rotate the knob so that the probe moves stably along the X, Y, Z-axis to a certain position and lock fixed. Maximum strokes of XYZ axis are 180mm,180mm and 280mm, and positioning accuracy is 0.1mm.

## SMART PC Software

SMART computer software has up to 7 digital readouts, and it has rich features: Automatically record and display trend graph; Display XYZ axis and vector of magnetic flux density, maximum and minimum in real time; Export saved data from the gaussmeter host; Record and save measurement data in real time.



Magnetometer

### GF603 Magnetometer Specification:

Model	GF603 / GF603S					
<b>(DC) Measurement Specification</b>						
Tested item	X, Y, Z		Vector R		*D	*I
Range (FS)	±100µT	±1000µT	173µT	1732µT	±180°	±90°
Accuracy	±0.25% Reading ±0.1% FS	±0.25% Reading ±0.1% FS	±0.5% Reading ±0.1% FS	±0.5% Reading ±0.1% FS	1°	1°
Finest Display Resolution	0.1nT		0.1nT		0.1°	0.1°
Measurement Resolution	0.1nT	0.2nT	0.1nT	0.2nT	0.1°	0.1°
Typical Temperature Coefficient ppm/°C	±100	±200	±100	±200	N/A	
Display Digits	5 digits (More display digits will be shown in supporting PC software)				4 digits	
Real-time Spectrum	Only GF603S within 15Hz~ 2kHz				N/A	
Hysteresis	<2nT for exposure to up to 2 x full scale <20nT for exposure to 10mT field within 10s				N/A	



<b>(AC) Measurement Specification</b>			
*Range	X, Y, Z	±70µT	±700µT
	R	121.2µT	1212.4µT
Accuracy	X, Y, Z	±1% Reading ± 0.1% FS [f <sub>T</sub> ≤ 300Hz] ±2% Reading ± 0.1% FS [300Hz < f <sub>T</sub> ≤ 500Hz] ±10% Reading ± 0.1% FS [500Hz < f <sub>T</sub> ≤ 2kHz]	
	R	±2% Reading ± 0.1% FS [f <sub>T</sub> ≤ 300Hz] ±4% Reading ± 0.1% FS [300Hz < f <sub>T</sub> ≤ 500Hz] ±18% Reading ± 0.1% FS [500Hz < f <sub>T</sub> ≤ 2kHz]	
Frequency Response [f <sub>T</sub> ]		DC – 2kHz	
<b>Front Panel</b>			
Screen		3.2 inches color resistive touch LCD,320x240 Pixel	
Units		Gauss(G), Tesla(T), Amperes per meter (A/m)	
Display Update Rate		3 readings/second	
Display Mode		DC, AC, XYZ Axis, Vector R, Declination, Inclination, MAX, MIN, Trend Graph, Alarm, Polarity Indication, Real-time Spectrum [GF603S] etc.	
<b>Probe</b>			
Start-up Time		150 ms	
Warm-up Time		15 min	
Probe Range		Could be customized within ±1500µT	
Probe Cable Length		Standard 1.5m; Customizable longest length of 300m; The probe is directly connected to the host via cable and without plug-in.	
<b>USB Interface</b>			
Function		1, Communication Interface: to connect PC with gaussmeter host for monitoring the measurement; 2, Charging interface: to connect PC or mobile power with gaussmeter host for charging	
Software/ Driver		SMART PC Software without any driver	
<b>Host Specifications</b>			
Operating Temperature		+15°C to +35°C (Rated Accuracy) -10°C to +60°C (Reduced accuracy)	
Storage Temperature		- 20°C to +75°C	
Ambient Magnetic Field		<100G (10mT)	
Battery		Rechargeable 4500mAH Li-ion	
Operating Battery Life		6 hours; Can be charged by AC power or portable battery	

Dimension	238 mm <b>W</b> × 95 mm <b>H</b> × 42 mm <b>D</b>
Weight	350g
Certification	CE Certification, EMC Certification

Note:

- 1, D- Declination, is the angle that between the Z axis and the projection of the field vector onto the XZ plane.
- 2, I- Inclination, is the angle that between the field vector and the XZ plane.
- 3, AC Range mentioned above refers to AC magnetic field measurement range after DC magnetic field is shielded, so if DC magnetic field is not shielded, and users want to measure magnetic field in AC measurement mode, AC Range is equivalent to the value that 0.7 times of DC Range minus DC magnetic field intensity. [ $\text{SQRT}(2)/2 \approx 0.7$ ]

## Probes Specification

Model GF603/ GF603S Magnetometer Probes						
Probe Model	*Range	Frequency Response	Probe Size	Typical Temperature Coefficient	DC Accuracy ( 25°C)	Stem Material
GFs-Y01	±100μT	DC-2kHz	24x24x50 mm	±100ppm/°C	±0.25%	POM
GFs-Y02	±200μT	DC-2kHz	24x24x50 mm	±100ppm/°C	±0.25%	POM
GFs-Y05	±500μT	DC-2kHz	24x24x50 mm	±150ppm/°C	±0.25%	POM
GFs-Y10	±1,000μT	DC-2kHz	24x24x50 mm	±200ppm/°C	±0.25%	POM
GFs-Y15	±1,500μT	DC-2kHz	24x24x50 mm	±250ppm/°C	±0.25%	POM

Note:

- 1, Probes can be customized within ±1500μT; Unit Conversion: 1G=100μT =100,000nT;
- 2, The probe is connected and fixed with the host through the cable, no plug-in, non-removable, please select the appropriate range and probe cable length before ordering.
- 3, The probe cable length is 1.5m default, and could be customized within 300m.
- 4, Fluxgate probe's environmental protection / sealing is IP66 by default;
- 4, Please contact *Coliy* for probes with higher environmental protection, like supporting the fluxgate probe in the long-term work of 100 meters underwater.



## Optional Accessories

Model	Descriptions
GHOLD100	3-Direction Precision Movement Platform, is made of non-magnetic material. Users fixed the probe on the bracket front-end, and then manually rotate the knob so that the probe moves stably along the X, Y, Z-axis to a certain position and lock fixed. Maximum strokes of XYZ axis are 180mm,180mm and 280mm, and positioning accuracy is 0.1mm; center load: 20kg; weight: 6.2kg
SAMRT PC Software	PC SOFTWARE for Magnetometer
Probe Extension Cable	MAX length is 300m

## Description of Magnetometer Host Type Selection

Magnetometer	Description
GF603	Magnetometer <i>WITHOUT</i> the function of real-time spectrum analysis
GF603S	Magnetometer <i>WITH</i> the function of real-time spectrum analysis

