

G81 Universal Single-Axis Gaussmeter

- Bypass Zero Technology
- Peak-to-peak Noise <0.05G
- Accuracy 0.8%
- Cost-effective



Description:

G81 Gaussmeter is a high-performance handheld single-axis gaussmeter using COLIY's third-generation semiconductor gallium nitride (GaN) Hall sensor. Gallium nitride sensor has the characteristics of good temperature stability, unaffected by light, high linearity, and low noise, and its performance is ahead of the second-generation semiconductor gallium arsenide (GaAs) sensor technology.

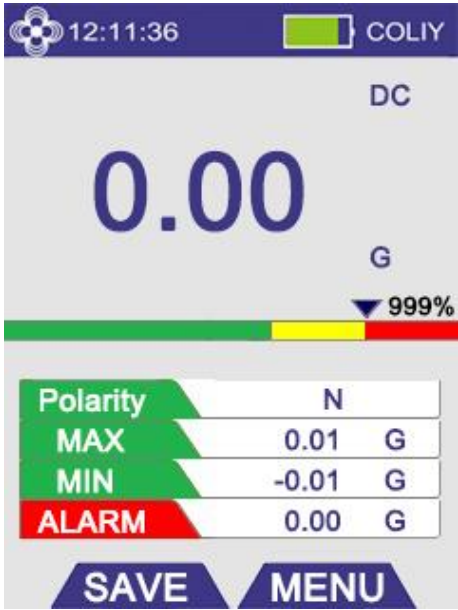
The Gaussmeter needs to be calibrated frequently during startup and measurement, which is inconvenient to operate and affects accuracy. G81 Gaussmeter adopts Bypass Zero Technology and high-stability GaN hall sensor, no need to zero, which greatly improves the accuracy of the data and the convenience of use. G81 also has extremely low measurement noise that is unique in a handheld gaussmeter. The peak-to-peak noise within 60 seconds is less than 0.05G. It can easily measure the metal materials' remanence and even measure the earth's magnetic field (about 0.4G).

The DC accuracy of Gaussmeter G81 is better than 0.8%, the measurement range is up to 100kG (10T), and the frequency response range is DC-10kHz. Gaussmeter G81 uses Fourier analysis method to measure AC magnetic field (RMS value and spectrum analysis), which is very suitable for measuring AC magnetic field of various waveforms (sine wave, square wave, triangle wave, trapezoidal wave, sawtooth wave, etc.). The Gaussmeter G81 uses a 3.2-inch color industrial resistive touch screen and a menu and display that conform to the smart phone habit. It is easy to operate, and users can use it without reading the manual. The Gaussmeter G81 is powerful, with maximum/minimum functions and magnetic field polarity display function, storage function, real-time spectrum analysis function and 0.2ms pulse magnetic field capture

function. Gaussmeter G81 has passed CE certification.

G81 could be equipped with many different kinds of Hall Probes: Transverse Probe, Axial Probe, Small-diameter Axial Probe (Diameter 2mm), Ultra-thin Probe (thickness of 0.5mm) and Probe with temperature compensation. The typical temperature coefficient of ordinary probes(probes without temperature compensation) is $\pm 300\text{ppm}/^{\circ}\text{C}$, but typical temperature coefficient of probes with temperature compensation is only $\pm 50\text{ppm}/^{\circ}\text{C}$, so probes with temperature compensation are strongly recommended for better precision and stability when the temperature changes.

Features	
<ul style="list-style-type: none">● Bypass Zero Technology● GUI Operation System● Gallium Nitride (GaN) Hall Sensor.● 3.2 inches color touch LCD● AC magnetic field measurement (RMS)● Max/Min/Hold Function● S or N Polar indication● Real-time Spectrum Analysis Function● Host storage capacity >6000 data	<ul style="list-style-type: none">● Measurement range up to 100kG(10T)● Peak-to-Peak Noise <0.05G● DC Accuracy 0.8%● Frequency Response DC- 10kHz● Temperature Coefficient up to $\pm 50\text{ppm}/^{\circ}\text{C}$● Small-diameter Axial Probe (Diameter 2mm)● Ultra-thin Probe (thickness of 0.5mm)● 0.2ms Pulse Magnetic Field Capture Function● Measure the RMS value of AC magnetic field as low as 0.5Hz



Bypass Zero Technology

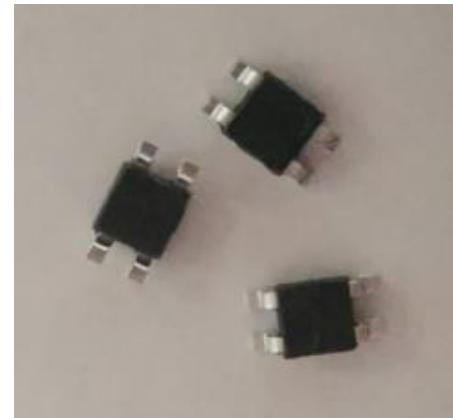
During the use of an ordinary gaussmeter, the host and probe will has zero drift due to changes in temperature and hysteresis. Therefore, the probe must be frequently placed in the zero-gauss chamber for zero calibration.

The Gaussmeter G81 adopts unique Bypass Zero Technology and high stability GaN Hall sensor. Both the host and probe have low zero drift error and extremely low noise. Temperature and hysteresis do not affect the zero drift of the gaussmeter. There is no need for zero calibration, which greatly improves the accuracy and convenience of use.

GaN Hall Sensor

GaN materials have the characteristics of strong atomic bonds, high thermal conductivity, good chemical stability and strong radiation resistance. GaN is known as the third-generation semiconductor materials, after the first generation of Ge, Si semiconductor materials and the second generation of GaAs, InP semiconductor materials.

COLIY's third-generation semiconductor gallium nitride (GaN) Hall sensor has the characteristics of good temperature stability, high linearity and low noise, and its performance is ahead of the second-generation semiconductor gallium arsenide (GaAs) sensor technology.



Smart Record and Review

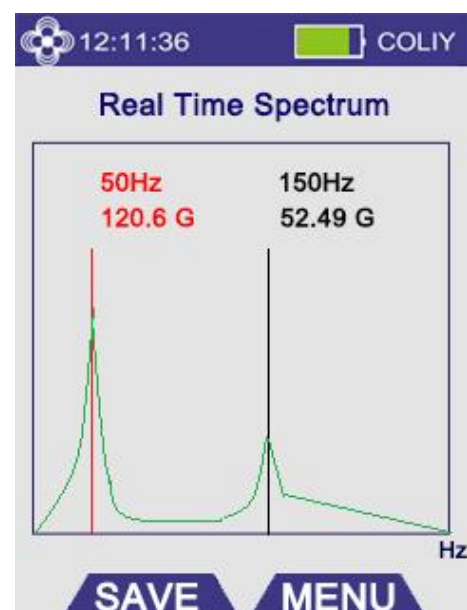
Smart Record: Users can choose any time period and time interval, and can add remarks for each record. The host storage capacity is greater than 6000 data.

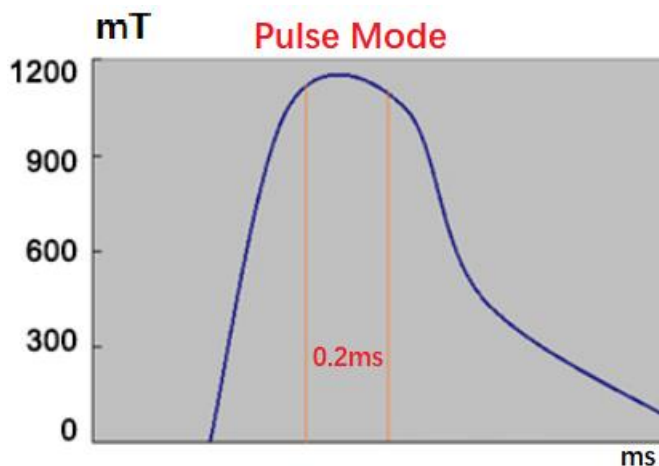
Smart View: Provides a detailed record list, and users can view the details of each measurement data. Click any record list, the user can see the complete storage information, the display format of this information is similar to the screenshot display.

Real-time Spectrum Analysis

For AC magnetic field, G81 Gaussmeter has real-time spectrum analysis function, and the spectrum analysis range is <10kHz.

Using Fourier analysis of 20Hz-10kHz AC magnetic field, the screen will display the 2 largest magnetic field peaks and frequency values.





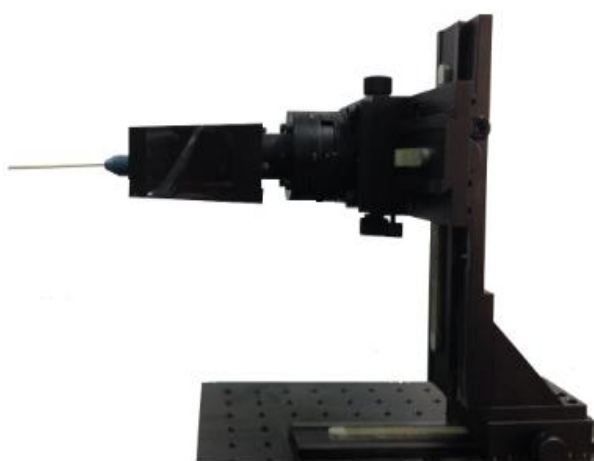
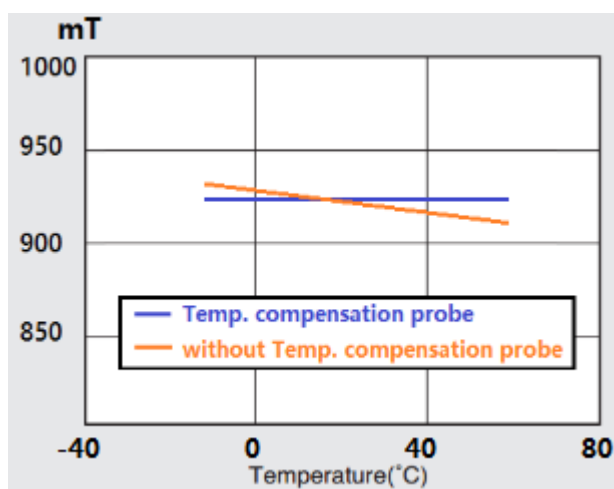
Pulse Mode

The digital sampling frequency of the G81P Gaussmeter is as high as 100k/s, so it can capture the pulsed magnetic field with a time width of $\geq 0.2\text{ms}$, and the maximum pulsed magnetic field value is up to 10T.

This is ideal for measuring magnetizers and other fast pulsed magnetic field applications.

Temperature Compensation

The typical temperature coefficient of ordinary probes (probes without temperature compensation) is $\pm 300\text{ppm}/^\circ\text{C}$, but typical temperature coefficient of probes with temperature compensation is only $\pm 50\text{ppm}/^\circ\text{C}$, so probes with temperature compensation are strongly recommended for better precision and stability when the temperature changes.



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 stroke of each axis is 150mm, and positioning accuracy is 0.1mm.

Metal Protector of Probe

All probes of COLIY gaussmeter are protected by non-magnetic metal protectors (protective sleeves).

The non-magnetic metal protector can be tightened with the probe grip to protect the probe from strong impacts, squeezing, etc. It can prevent the probe from falling damage from a height of 10 meters, and even resist hammer strikes. It is recommended that users tighten and fix the non-magnetic metal sleeve after completing the magnetic field measurement to protect the probe from damage to the greatest extent.



G81 Gaussmeter Specification:

Model	G81 / G81P
Measurement Specification	
Accuracy(DC)	< ±0.8% (EACH PROBE CALIBRATED TO 3T)
Range	100kG (10T)
Frequency Response [f _T]	DC - 10kHz
DC Magnetic Field Noise	0.05G (5uT) [peak-to-peak value within 60s]
AC Measurement Mode	AC frequency response range 0.5Hz-10kHz RMS value, suitable for measuring AC magnetic field of various waveforms (sine wave, square wave, triangle wave, trapezoidal wave, sawtooth wave, etc.)
Spectrum Analysis	Using Fourier analysis of 20Hz-10kHz AC magnetic field, the screen will display the 2 largest magnetic field peaks and frequency values.
Display Digits	4
Host Storage Capacity	> 6000 data
Zero Drift	Using Bypass Zero Technology, there is no zero drift, and temperature and hysteresis have no effect on the zero drift of the magnetic field.
Typical Temperature Coefficient of Probe	±300ppm/°C (Probes without temperature compensation) <±50ppm/°C (Probes with temperature compensation)
Pulse Magnetic Field Capture Function	G81P Gaussmeter adds pulse magnetic field capture function: can capture pulsed magnetic field with pulse width ≥ 0.2ms.
Front Panel	
Screen	3.2 inches color resistive touch LCD, 320x240 Pixel
Units	Gauss(G), Tesla(T)
Display Update Rate	4 readings/second
Display Mode	DC, AC, MAX., MIN, Alarm, N/S Polarity Indication, Spectrum Analysis, and Pulse Mode, etc.
Probe	
Hall Sensor	COLIY's third-generation semiconductor GaN Hall sensor
Probes	See " Probe Specifications " for details.
Connector	Non-magnetic ultra-light 6-core waterproof connector
Probe Grip and Protector	Non-magnetic aviation aluminum alloy, resistant to 10m drop
Probe Cable	6 shielded twisted pair core flexible cable; Standard CAT5e
Probe Cable Length	Standard 1.5m; Customizable longest length of 30 m

USB Interface

Function	1, Communication Interface: to connect PC with gaussmeter host for monitoring the measurement; 2, Charging interface: Used to connect a 5VDC charger or mobile power supply
Software/ Driver	With host computer software / Support LabVIEW™

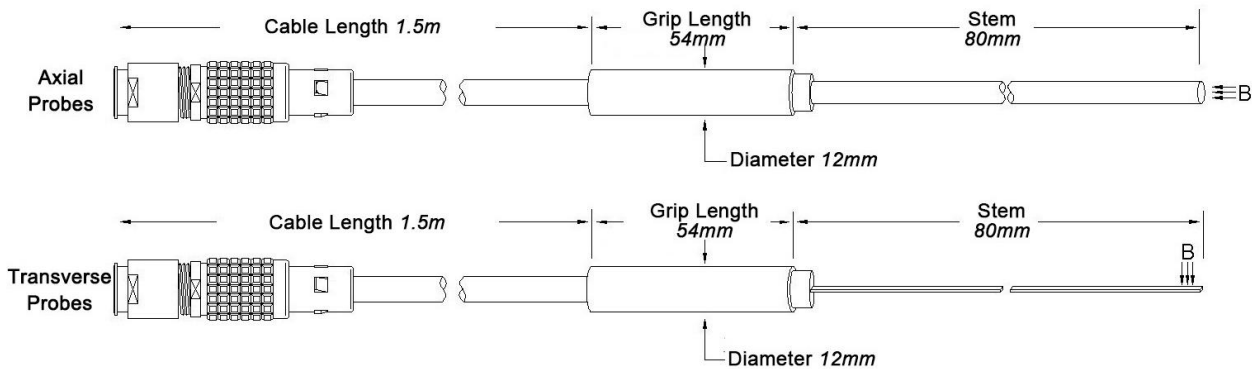
Analog Output

Linearity (DC)	±0.8%
Function	Real-time output, the output voltage is proportional to the magnetic flux density
Full-scale Voltage	±5 V
Scaling (Proportion)	typ. 1T/V (Could be customized, such as 2T/V, 0.1T/V, etc.)
Frequency Response	See “Probe Specifications” for frequency response
Output Resistance	< 100 Ω (short circuit protected)
Connection	Dedicated analog output BNC conversion cable

Host Specification

Operating Temperature	-20°C to +60°C
Warm-up time	Can be used immediately after the device is turned on 30 min to meet the best performance
Host Temperature Coefficient	<±20ppm/°C; Negligible impact on accuracy within the operating temperature range
Storage Temperature	- 20°C to +80°C
Ambient Magnetic Field	<1kG(0.1T)
Battery	Rechargeable 5200mAH Li-ion
Operating Battery Life	>16 hours (Test in standard test environment, working time will be reduced in low temperature environment)
Power Supply	5VDC; could be charged by a mobile power supply
Dimension	238 mm W × 95 mm H × 42 mm D
Weight	350g
Certification	CE Certification, EMC Certification

Probes Specification

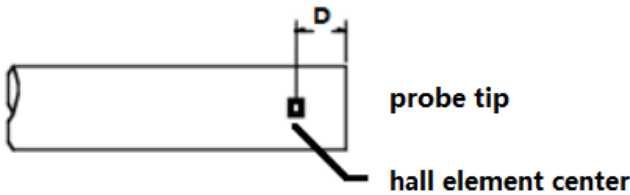


Model G81 / G81P Gaussmeter Probes						
Probe Model	Range	Frequency Response	Stem dimension (mm)	Operating Temperature (°C)	DC Accuracy (25°C)	Stem Surface Material
Transverse T08M150G81 T08M150G81T	100kG (10T)	DC-10kHz	80*2.2*1	-20 - +75	±0.8%	Metal
Transverse T08P150G81 T08P150G81T	100kG (10T)	DC-10kHz	80*2.5*1.3	-20 - +75	±0.8%	Plastic
Axial A08M150G81 A08M150G81T	100kG (10T)	DC-4kHz	80*Φ6	-20 - +75	±0.8%	Metal
Small-diameter A08S150G81 A08S150G81T	100kG (10T)	DC-2kHz	80*Φ2	-20 - +75	±0.8%	Metal
0.5mm Ultra-thin T06U150G81 T06U150G81T	100kG (10T)	DC-2kHz	60*2.5*0.5	-20 - +75	±0.8%	Plastic

Note:

- 1, Option “T”: Probe with temperature compensation, and its typical temperature coefficient is <±50ppm/°C;
- 2, Each probe’s fully calibrated measurement range: ±3T; The accuracy of the range 3T-10T is determined by the linearity of the Hall sensor. It is hoped that the accuracy parameters can be reached, but it cannot be guaranteed.
- 3, Probes with special requirements can be customized.
- 4, Transverse Probe’s sensor center position:

Copper Probe: D=1mm±0.2mm
Plastic Probe: D=1.2mm±0.2mm



Optional Accessories

Model	Descriptions
CAB30	BNC adapting cable for analog output (Only for G81 Gaussmeter)
SAMRT PC Software	PC SOFTWARE for Gaussmeter
GHOLD100	3-Direction Precision Movement Platform, 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 stroke of each axis is 150mm, positioning accuracy of 0.1mm; center load: 10kg; weight: 3.5kg

The most popular Package

Package Product No. G8101: Gaussmeter G81 + Probe T08M150G81

Package Product No. G8101T: Gaussmeter G81 + Probe T08M150G81T

Description of Probe Type Selection

Host Type	Description
G81	Universal single-axis gaussmeter host
G81P	Universal single-axis gaussmeter host, adds pulse magnetic field capture function: can capture pulsed magnetic field with pulse width $\geq 0.2\text{ms}$

Description of Probe Type Selection

T	08	M	150	G81	T
PROBE TYPE	STEM LENGTH	PROBE STYLE	CABLE LENGTH	GAUSSMETER MODEL	TEMPERATURE COMPENSATED
A - AXIAL T - TRANSVERSE	06 - 6 cm 08 - 8 cm 10 - 10 cm 20 - 20 cm ...	M – METAL P – PLASTIC U – ULTRATHIN S – SMALL DIAMETER	150 150cm ...	G80 – G80 probe G81 – G81 probe	T - YES BLANK - NO

Compare With Competitors

COLIY has an advantage	COLIY MODEL G81	FWBELL MODEL 5180
Accuracy(DC)	0.8%	1%
MAX Range	100kG (10T)	30kG (3T)
Noise	0.05G (5uT)	0.4G (4uT)
Display screen	3.2" Color touch LCD	Black and white LCD
Display Digits	4 (example:5678G)	3 ^{1/2} (example:5.68kG)
Temperature coefficient	Typ. $\pm 50\text{ppm}/^{\circ}\text{C}$	$\pm 870 - \pm 950\text{ppm}/^{\circ}\text{C}$ **
Probe protector	Non-magnetic Metal	Brittle Plastic
Operation System	Touch Screen	Button Control
N/S Polar Indication	YES	NO
High range probe(10T)	YES	NO
Smart record and review	YES	NO
Trend Graph display	YES	NO
Spectrum Analysis	YES	NO
Temperature Compensation	YES	NO
0.2ms Pulse Magnetic Field Capture Function	YES	NO

*According to the practical test results.

