G401 High Precision Desktop Single-Axis Gaussmeter

- **Bypass Zero Technology**
- **Accuracy 0.04%**
- **Range 10T**

Description:

Coliy Model G401 is a high-precision desktop single-axis Gaussmeter, which uses third-generation semiconductor gallium nitride (GaN) Hall sensor. Gallium nitride sensor has the characteristics of good temperature stability, not affected by light, high linearity and low noise, and its performance is ahead of the second generation semiconductor gallium arsenide (GaAs) sensor technology.

Ordinary Gaussmeter boot and measurement often need to zero, cumbersome operation, affect the accuracy. G401 Gaussmeter adopts Bypass Zero Technology and high stability GaN Hall sensor, which is ready to start without Zero correction, greatly improving the accuracy and convenience of use.

The DC accuracy of G401 Gaussmeter is better than 0.04%, measuring range up to 100kG(10T), frequency response range DC-10kHz. G401 Gaussmeter has up to 7 display digits, very low measurement noise in the full range, typical DC magnetic field noise of 0.01G(1μT).

Gaussmeter G401 adopts 9 inches color industrial resistance touch screen, built-in graphical interface operating system, easy to operate by users; small size, save desktop space, low power consumption, low-power design, environmental protection.

Gaussmeter G401 provides advanced functionality, with maximum/minimum value, magnetic field polarity display, storage, time domain diagram, oscilloscope, real-time spectrum analysis and 0.2ms

pulse magnetic field capture functions; G401 Gaussmeter has a variety of measurement modes: DC standard mode, DC time domain diagram mode, AC standard mode, AC spectrum analysis mode, AC oscilloscope mode and 0.2ms pulse magnetic field mode, which can meet various complex magnetic field measurement occasions. G401 Gaussmeter adopts Fourier analysis method to measure the RMS value of AC magnetic field. The frequency response range is 0.5HZ-10kHz, which is suitable for measuring the magnetic field of sine wave, square wave, triangle wave, trapezoidal wave, sawtooth wave and other waveforms.

Gaussmeter G401 could be equipped with different kinds of Hall Probes: Standard Transverse Probe, Standard Axial Probe, and Temperature sensor-contained Probe. The temperature coefficient of ordinary probes is 100ppm/℃, but temperature sensor-contained probes (probes with built-in temperature sensor), whose temperature coefficient is down to 20ppm/℃, have the function of temperature compensation, so temperature sensor-contained probes are strongly recommended for better precision and stability when the temperature changes.

Gaussmeter G401 has passed the CE certification and EMC (Electromagnetic Compatibility) test.

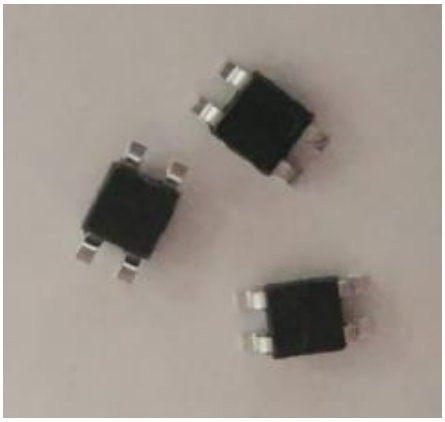
Features

● Bypass Zero Technology	● Measurement range up to 100kG(10T)
● GUI Operation System	● Typical DC magnetic field noise 0.01G (1 μ T)
● third-generation semiconductor gallium nitride (GaN) Hall sensor	● DC Basic Accuracy : 0.04%
● 9 inches color touch LCD	● Frequency response DC- 10kHz
● RMS AC magnetic field measurement of various waveforms	● Optional probes with temperature compensation function (down to 20ppm/℃)
● Measure RMS AC magnetic field as low as 0.5Hz	● Max/Min Function
● Full 7 display digits	● 0.2ms pulse magnetic field capture functions
● Design by aviation aluminum shell, save desktop space	● Real-time spectrum analysis function
	● Oscilloscope function
	● Low power fanless design, green and environment-friendly

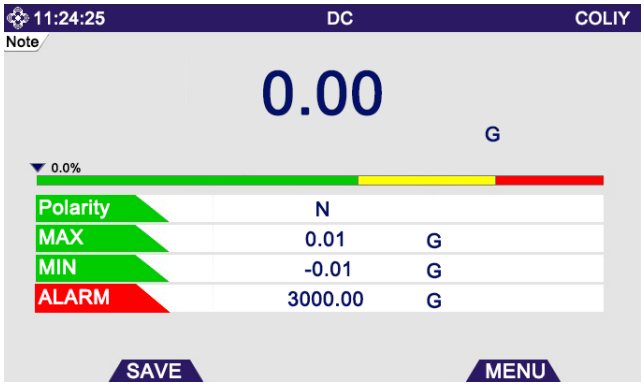
GaN Hall sensor

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

The third-generation semiconductor GaN Hall sensor of COLIY Company is characterized by good temperature stability, high linearity and low noise, and its performance is ahead of the second generation semiconductor GaAs sensor.



Bypass Zero Technology

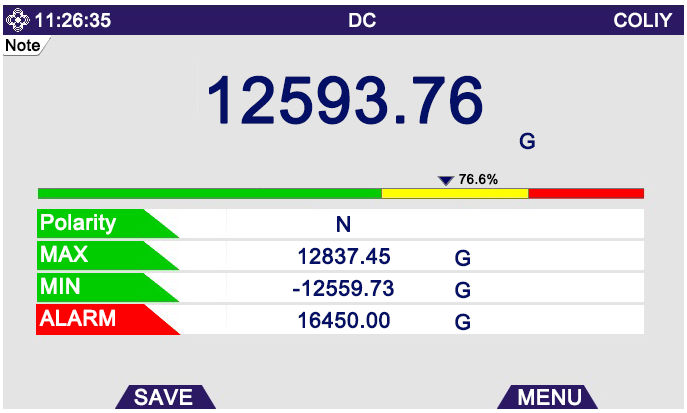


During the use of ordinary Gaussmeters, the magnetic field zero point of the host and probe will shift due to temperature changes and hysteresis, so the probe must always be put into the zero calibration chamber for zero calibration. G401 Gaussmeter adopts unique Bypass Zero Technology proprietary technology and high stability GaN Hall sensor. Both the host and probe have excellent zero stability and low noise. Temperature and hysteresis do not affect the zero point of the Gaussmeter. Zero calibration is not required during use, which greatly improves the accuracy of data and convenience of use.

Intelligent graphical interface operating system&rich display style

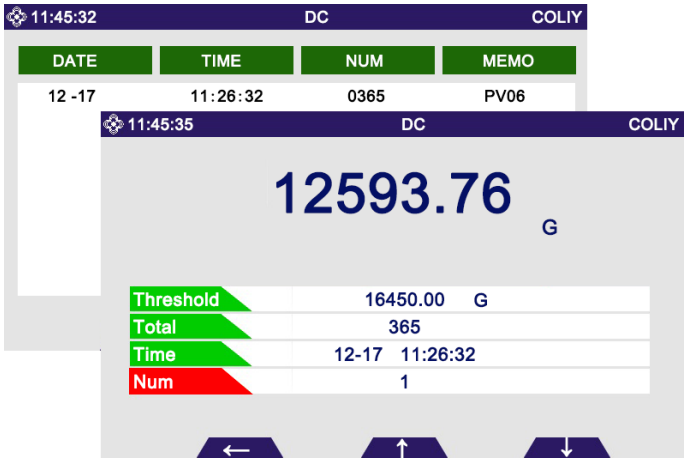
The graphical interface operating system developed by COLIY allows users to select menus by touching, which is easy to operate and clear at a glance.

The color LCD display screen displays a variety of data: time, measurement mode, real-time magnetic field strength, polarity, maximum value, minimum value, relative value, storage time interval, annotation, alarm threshold, time domain diagram, etc.



Gaussmeter

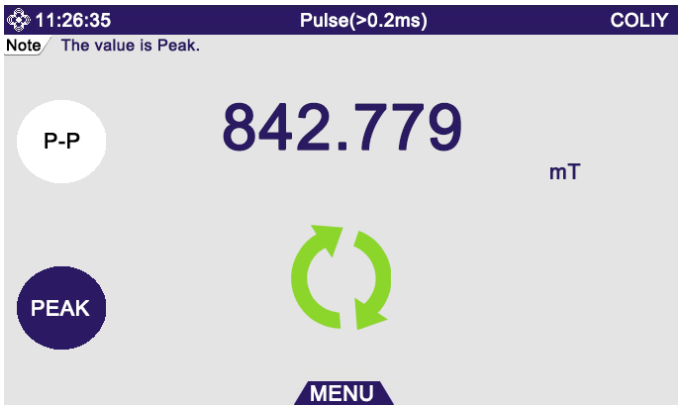
Intelligent recording and viewing



Intelligent data record: the user can select any time length and any time interval, and can add notes to each record. The host storage capacity is greater than 8000 data.

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

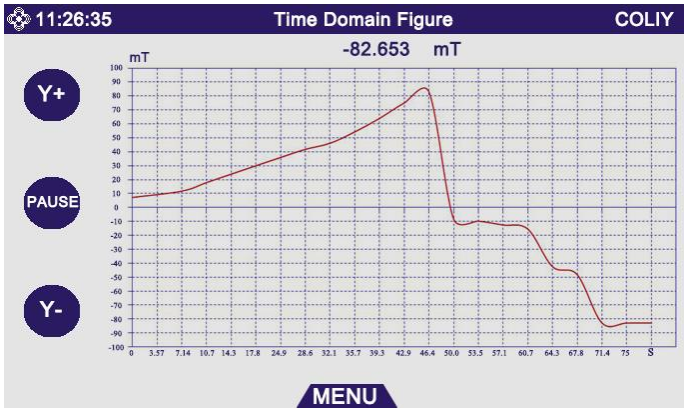
0.2ms pulse magnetic field capture function



G401 Gaussmeter can sample at high speed and capture positive and negative pulse magnetic fields with time width ≥ 0.2ms, and the maximum pulse magnetic field value is up to 10T.

The peak to peak value or peak value of the pulsed magnetic field can be selected according to the use scenario.

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

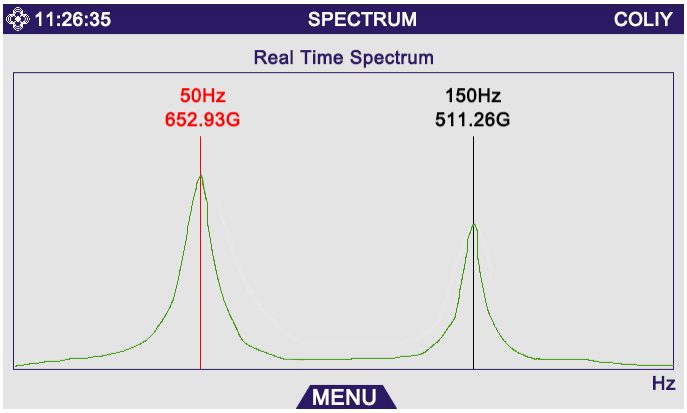


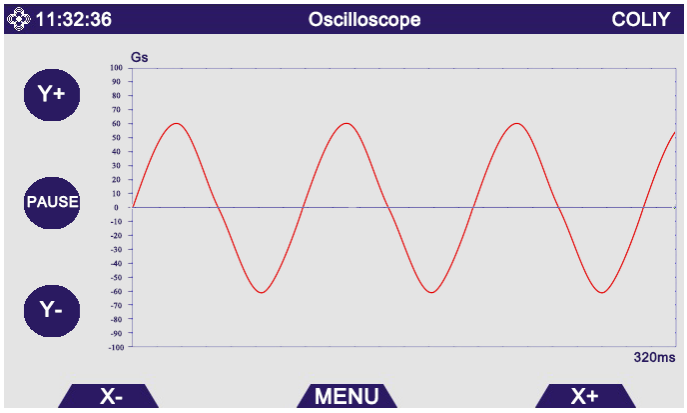
Time domain diagram function

G401 Gaussmeter can display the trend chart of magnetic field changes with time within 75 seconds and the current magnetic field value.

Real time spectrum analysis

For AC magnetic field, G401 Gaussmeter has real-time spectrum analysis function, and the spectrum analysis range is less than 10kHz. Fourier is used to analyze the AC magnetic field of 20Hz-10kHz, and the screen displays two maximum magnetic field peaks and frequency values.



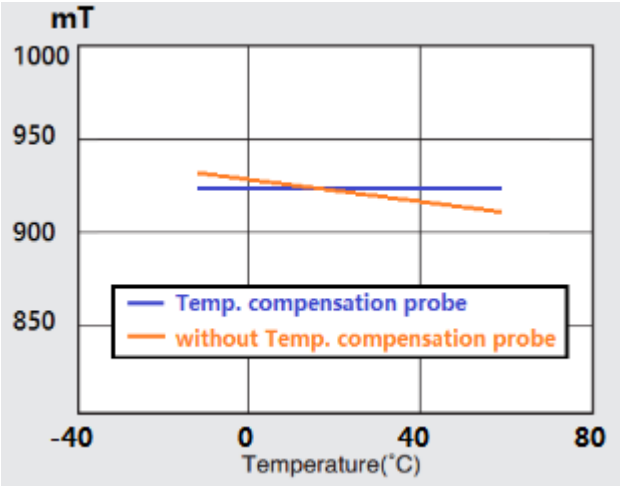


Oscilloscope function

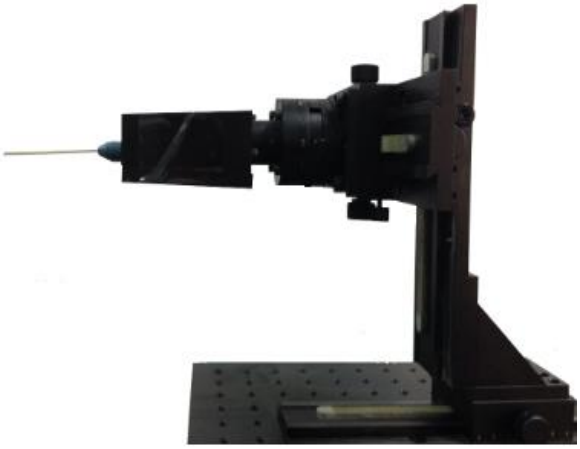
The G401 Gaussmeter is a breakthrough in integrating the magnetic field oscilloscope function, which can display the magnetic field waveform up to 5kHz in real time, or high-frequency noise disturbance.

Temperature compensation

The conventional probe does not contain a temperature sensor, and its temperature coefficient is 100ppm/℃, while the probe with built-in temperature sensor has a temperature compensation function, and its temperature coefficient is as low as 20ppm/℃, which can improve the accuracy and stability of measurement data when the temperature changes. Therefore, it is strongly recommended to purchase a probe with built-in temperature sensor.



Gaussmeter



3D movable platform

The three-dimensional mobile platform is made of non-magnetic materials. The user fixes the probe at the front end of the bracket, manually rotates the knob to make the probe move steadily to a certain position along the X, Y, Z axis direction, and locks and fixes it. The maximum stroke of each shaft is 150 mm, and the positioning accuracy is 0.1 mm.

Metal protective sleeve

All the probes of COLIY Gaussmeter are protected by non-magnetic metal casing.

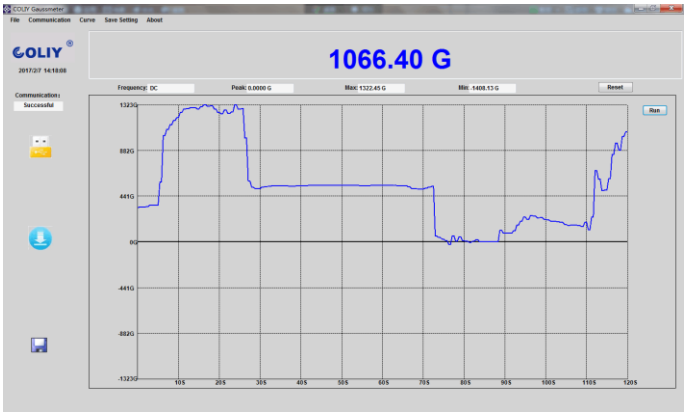
The non-magnetic metal sleeve can be tightened and fixed with the probe handle to protect the probe from strong impact, extrusion, etc. It can prevent the probe from falling down at a height of 10 meters, and even resist the impact of a hammer. It is suggested that the user should tighten and fix the non-magnetic metal sleeve after completing the magnetic field measurement to protect the probe from damage to the maximum extent.

Split design

The host and base of G401 Gaussmeter are designed separately. With the base, the G401 Gaussmeter host can be placed upright on the desktop; Remove the base, and the G401 Gaussmeter host is used as a handheld tablet, which is flexible and convenient. The mobile phone charging bank can be used as the mobile power supply of the Gaussmeter.

SMART software

SMART computer software has rich functions: it can automatically record and display trend curves; Real time display of magnetic field strength, maximum value and minimum value; The data saved by the Gauss meter host can be exported; The magnetic field strength data can be recorded and saved in real time.

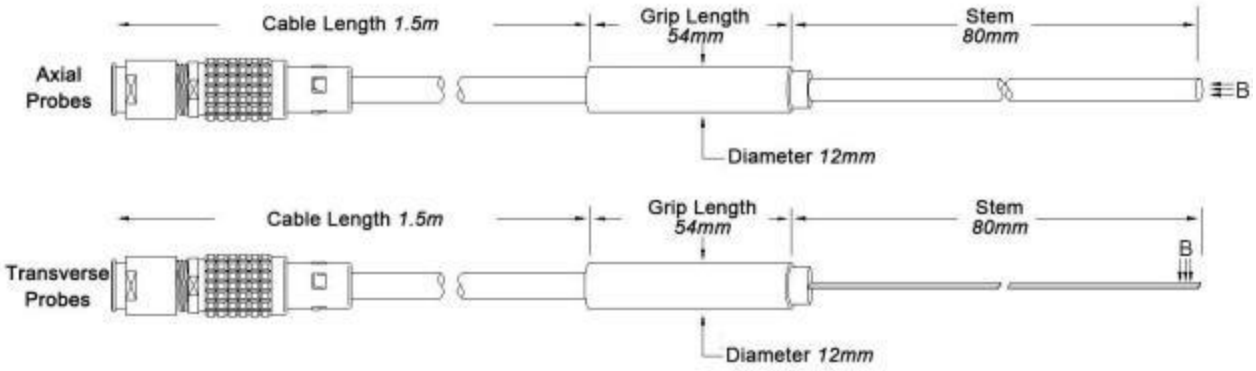


G401 Gaussmeter Specification

Model	G401
Measurement Specification	
Accuracy (DC , 25℃)	≤ ±0.04% of Reading ± 0.2G
Range	100kG (10T)
Frequency Response	DC - 10kHz
Typical DC Field Noise	0.01G (1 μ T)
Measurement Mode	1, DC standard: display real-time value, magnetic field polarity N/S, maximum value, minimum value, alarm threshold. 2, DC time domain diagram: it shows the trend diagram of magnetic field changing with time within 75 seconds. 3, AC standard: AC frequency response range 0.5Hz-10kHz, RMS root mean square value, suitable for various waveforms, such as sine wave, square wave, triangular wave, trapezoidal wave, sawtooth wave, etc. 4, AC spectrum analysis: Fourier analysis 20Hz-10kHz, the screen displays two maximum magnetic field peaks and frequency values. 5, AC oscilloscope: real-time display of magnetic field waveform up to 5kHz or high-frequency noise disturbance； 6, Pulse magnetic field measurement: capture positive and negative pulse magnetic fields with time width ⩾ 0.2ms, and the maximum pulse magnetic field value is up to 10T.
Display Digits	All 7 digits, maximum 99999.99G
Zero Drift	Adopt the proprietary technology of Bypass Zero Technology, without zero drift, and temperature and hysteresis have no effect on zero
Typical Temperature Coefficient	< ±100ppm/℃ (Conventional probe) < ±20ppm/℃ (Probes with temperature compensation)
Front Panel	
Screen	9 inches color resistive touch LCD,800 x 600 Pixel
Units	Gauss(G), Tesla(T)
Display Update Rate	4 readings/second
Display Mode	DC, AC, MAX, MIN, Alarm, Polarity Indication, Spectrum analysis, 0.2ms pulse magnetic field capture, oscilloscope, Trend Graph etc.
Probe	
Sensor	COLIY Third Generation Semiconductor GaN Hall Sensor

Probes	See ***"Probe Specifications"*** for details.
Connector	IP67 waterproof connector
Probe Handle and Protective Sleeve	Non magnetic aviation aluminum alloy, resistant to 10m drop
Cable Line	Shielded twisted pair flexible cable, complying with CAT5e standard
Probe Cable Length	Standard 1.5m; Customizable longest length of 30 m
USB Interface	
Function	To connect PC with gaussmeter host for monitoring the measurement, display data and can be powered by a mobile power supply (5V)
Software/ Driver	SMART PC Software / LabVIEW™
Analog Output	
Linearity (DC)	±0.1%
Function	Real time output, the output voltage is proportional to the magnetic
Full Scale Voltage	±5 V
Output Scale	6 options(x1, x2, x4, x8, x16, x32)
Frequency Response	See probe frequency response parameters
Connection	BNC adapting cable for analog output
Host Specification	
Storage Temperature	- 25℃ ~ +60℃
Operating Temperature	-20℃ ~ +50℃
Preheat	It is ready for use after startup, Optimal performance after 5 minutes
Temperature Coefficient	<±10ppm/℃，Neglect the influence on accuracy within the operating temperature range
Ambient Magnetic Field	<1kG(0.1T)
Power Supply	5VDC，Mobile power supply can be connected
Power Interface	Type-C USB
Dimension	281 mm W × 164 mm H × 26 mm D
Weight	1.52kg
Texture of Material	High strength aviation aluminum alloy
Certification	CE Certification, EMC Certification

Probe Specification



Model G401 Gaussmeter Probes							
Probe Model	**Range**	**Best Resolution**	**Frequency Response**	**Stem dimension** (mm)	**Operating temp.** (℃)	**DC Accuracy** (25℃)	**Stem surface material**
Transverse T08M150G401 T08M150G401T	100kG (10T)	0.01G (1μT)	DC-10kHz	80*2.2*1	-20 - +60	±0.04%	Copper
Axial A08M150G401 A08M150G401T	100kG (10T)	0.01G (1μT)	DC-1kHz	80*Φ6	-20 - +60	±0.1%	Copper

Note：

1, Option “T” : Temperature sensor contained Probe, has the function of temperature compensation, and the temperature coefficient is <±20ppm/℃;

2, Each probe’s fully calibrated measurement range: ≤±20kG(±2T);

3, The probe rod size, surface material and cable length can be customized.

Optional Accessories

Model	Descriptions
ZC10	Zero chamber, provides up to 80 dB attenuation in fields up to 500 G and can be used with standard probes. Internal dimension of the Chamber: diameter 6.8mm x 44.5mm
PS-1W	Mobile power supply, and G401 can be powered via a USB interface to meet the needs of outdoor measurement of magnetic fields. Capacity: 10000mAh; Input: 100- 240VAC; Output: 5V/2A
SAMRT PC Software	PC SOFTWARE for Gaussmeter
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 stroke of each axis is 150mm, positioning accuracy of 0.1mm; center load: 10kg; weight: 3.5kg
Probe Extension Cable	Cables are available in lengths to 30m.

The most popular Package
Package Product No. G40101: Gaussmeter G401 + Probe T08M150G401 + Zero Chamber ZC10

Description of Probe Type Selection

T	08	M	150	G401	T
PROBE TYPE A - Axial T - Transverse X - 2 AXIS Y - 3 AXIS	**STEM LENGTH** 06 - 6 cm 08 - 8 cm 10 - 10 cm 25 - 25 cm …	**PROBE STYLE** C – CRYOGENIC F – FLEXIBLE L – LOW FIELD M – METAL P – PLASTIC U – ULTRATHIN W – WIDE FIELD	**CABLE LENGTH** 150 – 150cm …	**GAUSSMETER MODEL** G401 – G401 probe	**TEMPERATURE COMPENSATED** T - YES BLANK - NO