



Measure Systems For Gas and Oil Industry

Analog/Digital

small-size high-temperature

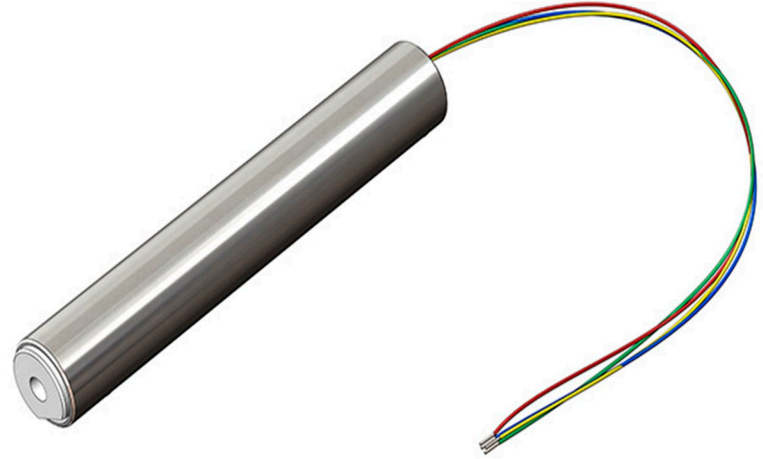
3-axis fluxgate magnetometer

Features

- Complete 3-axis system
- Implementation of analog and digital output in one construction
- Smallest size on the market with a diameter of $\varnothing 18\text{mm}$ and length of 110mm
- High accuracy over the -40°C to $+145^{\circ}\text{C}$ temperature range
- Low noise Level
- High shock and vibration tolerance
- Low power consumption
- Single power input $+5.6\text{V}$ to 6V

Applications

- Fluxgate compass systems
- Magnetic anomaly detection
- Measurement of the Earth's magnetic field
- Navigation systems



The 3-axis high-temperature analog/digital small-size fluxgate magnetometer designed for use in the field of magnetic measurement technology, specifically for magnetic navigation and navigation equipment, magnetic surveying, magnetic mapping, and other similar areas.

The main technical result of this magnetometer is the miniaturization of measurement equipment while ensuring high precision measurement of the vector components of the magnetic field.

The magnetometer is designed as a separate module consisting of a housing in which three orthogonally oriented fluxgates and an electronic unit are located. Data output can be either analog or digital, allowing users to obtain data in a convenient format.

The distinctive feature of this magnetometer is its miniaturization. With a diameter of only 18 mm and a length of 110 mm, it is the smallest magnetometer on the market in its class of accuracy. Due to its compact size, this magnetometer is ideal for use in limited space, making it a convenient tool in various fields where instrument size matters.

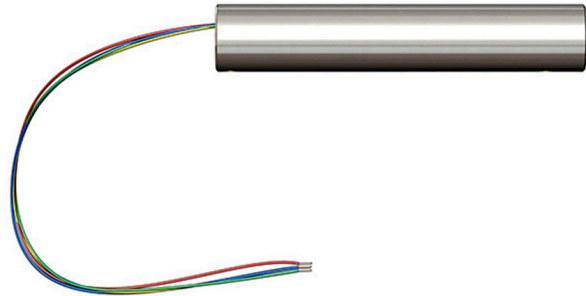
The special design of the fluxgates allows achieving measurement nonlinearity over the entire temperature range up to 145°C with an error not exceeding 0.1%, without resorting to calibration dependencies. This ensures measurement stability when the temperature changes, which is important for accurate measurements in various conditions.

In addition, the low power consumption and single-polarity power supply of the magnetometer allow it to be integrated into various autonomous magnetometric systems, increasing their autonomous operating time and ensuring efficient use of the magnetometer in different applications.

The magnetometer converts the magnetic induction vector into a digital code or analog signal by measuring orthogonal components of weak magnetic fields in the range of $\pm 70 \mu\text{T}$ (range can be extended). The digital version of the magnetometer comes with data visualization software.

This device, the magnetometer, is simple in design, requires no additional components, and can be miniaturized for integration into various measuring instruments. It is versatile and can be used for research in geophysics, military affairs, medicine, security, and materials control. The magnetometer can measure residual fields, monitor packaging, and even serve as a security alarm. Thanks to its simplicity and multifunctionality, it is an indispensable tool for many scientific and industrial fields.

Overall, this device is an example of a technological breakthrough that combines compactness, precision, and high sensitivity. It represents an innovative solution for a wide range of tasks and is an indispensable tool for many areas of science and industry.



PHISICAL			
Outside Diameter (OD)	mm	18	
Length	mm	110	
Output connections long	mm	180	
ELECTRICAL			
Supply voltage	V	+5.6 ... 6.0 ⁽¹⁾	
Current consumption	mA	< 20	
ENVIRONMENTAL			
Operational temperature range	°C	-40 ... 145	
PERFORMANCE			
Number of axes	pcs.	3	
Measuring range	μT	±70 ⁽²⁾	
		analog	digital
Scaling error	%	1	0.1
Zero error	%	1	0.1
Orthogonality error	deg	1	0.05
Resolution	nT	< 0.1	< 2.2 ⁽³⁾
Bandwidth	kHz	0...2	
Update Rate	Hz		20
Sensitivity	μV/nT	35	
Temperature offset of measurement values for a digital	%	< 0.1	
Zero temperature offset for an analog	%	< 0.1	
Linearity error	%	< 0.1	
Output voltages of analog measurement outputs X, Y , Z	V	0 ... 5	
Output voltage of the analog output 'zero offset'	V	2.5	
Digital interface		UART ⁽⁴⁾	
Voltage levels of the digital interface		RS232	
		1.7V ... 5.5 V ⁽⁵⁾	
Digital interface protocol		Upon agreement	
Supply of software for WINDOWS for visualization of digital magnetometer measurement values is possible			

1. Range expansion is possible
2. Other ranges are possible
3. With a measurement range of ±70 μT (possibly 0.5 nT)
4. Speed by agreement
5. From an internal or external power source



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