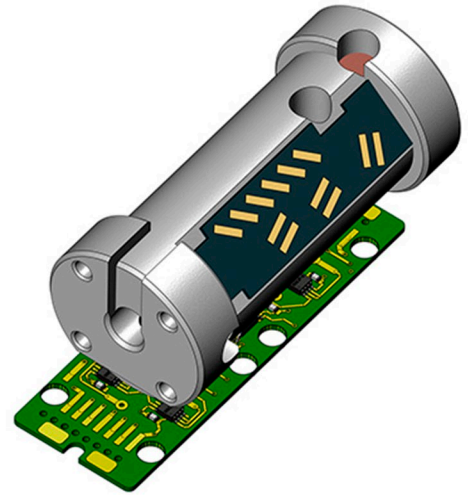


**Features**

- Complete 3-axis system
- Compact size, analog/digital in a single design
- Two sizes of fluxgate housings for  $\varnothing 16\text{mm}$  and  $\varnothing 23\text{ mm}$
- High accuracy over the  $-40^{\circ}\text{C}$  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  $6\text{V}$

**Applications**

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



The 3-axis high-temperature analog/digital fluxgate magnetometer is used in magnetic measuring technology, particularly in magnetic navigation and navigation equipment, magnetic exploration, magnetic mapping, and similar fields. Its main technical benefit is that it shrinks the size of measuring equipment while maintaining high accuracy in measuring the components of the magnetic field induction vector across a broad temperature range.

The magnetometer comprises a housing with three fluxgates oriented orthogonally and a separate electronic unit. Data output can be in both analog and digital formats, and it comes in a single design. The magnetometer operates on the principle of registering periodic changes in the magnetic field flux through ferromagnetic cores that change their magnetic permeability periodically due to the field of the excitation coil. These changes are recorded using a measuring coil that induces an electromotive force.

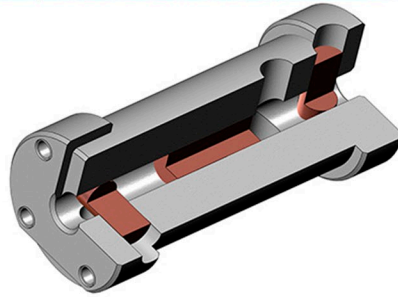
The special design of the fluxgates achieves non-linearity of measurement without relying on calibration dependencies over the entire temperature range in a dimension of no more than 0.1%. The sensor's extended operating temperature range results from an innovative solution that compensates for the dependence of the saturation of the fluxgates on temperature. The sensor also has a low power consumption and a unipolar magnetometer power supply, allowing for the integration or design of new offline magnetometric systems with increased offline time.

This fluxgate magnetometer converts the orthogonal components of the magnetic induction vector into a digital code or analog signal on demand, making it ideal for measuring weak magnetic fields up to  $\pm 70\ \mu\text{T}$  (other ranges also possible).

One of the key advantages of the fluxgate device is its simplicity of design. Unlike other magnetometers, it does not require additional compensation windings or inductive coils, which reduces its overall size and cost. This also allows it to be easily integrated into existing measuring equipment.

The fluxgate device has a wide range of applications, from scientific research to military and security purposes. It can be used in electromagnetic geophysical research to measure the earth's magnetic field or to detect and locate buried objects. In medicine, it can be used for brain and heart imaging, as well as for magnetic drug delivery. It is also utilized in burglar alarms and residual field measurement, as well as for material and packaging control in manufacturing.

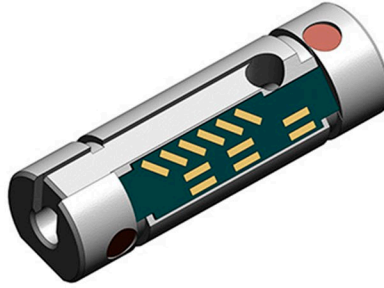
Despite its small size and cost-effectiveness, the fluxgate device has a sensitivity that surpasses that of other known sensors by more than an order of magnitude. This makes it an ideal choice for applications requiring precise and accurate measurements of weak magnetic fields.



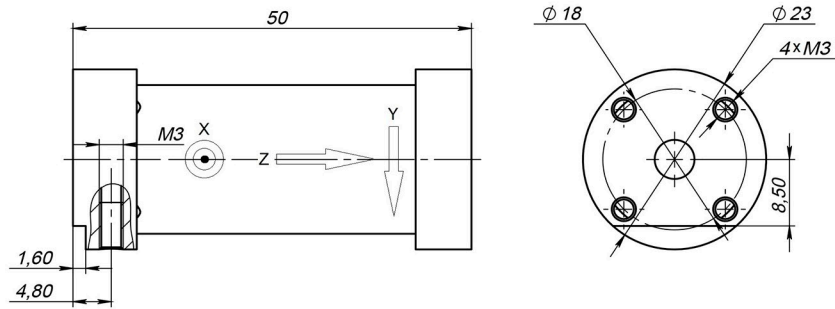
PHISICAL			
Outside Diameter (OD) fluxgates housing	mm	16/23 <sup>(1)</sup>	
Length fluxgates housing	mm	50	
Length/Width (PCB board)	mm	100/18 <sup>(2)</sup>	
Output connections long	mm	180	
Square (PCB board)	mm <sup>2</sup>	< 1800	
ELECTRICAL			
Supply voltage	V	+5.6 ... 6.0 <sup>(3)</sup>	
Current consumption	mA	< 20	
ENVIRONMENTAL			
Operational temperature range	°C	-40 ... 145	
PERFORMANCE			
Number of axes	pcs.	3	
Measuring range	μT	±70 <sup>(4)</sup>	
		analog	digital
Scaling error	%	1	0.1
Zero error	%	1	0.1
Orthogonality error	deg	1	0.05
Resolution	nT	< 0.5	< 2.2 <sup>(5)</sup>
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 <sup>(6)</sup>	
Voltage levels of the digital interface		RS232	
		1.7V ... 5.5 V <sup>(7)</sup>	
Digital interface protocol		Upon agreement	
Supply of software for <b>WINDOWS</b> for visualization of digital magnetometer measurement values is possible			

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

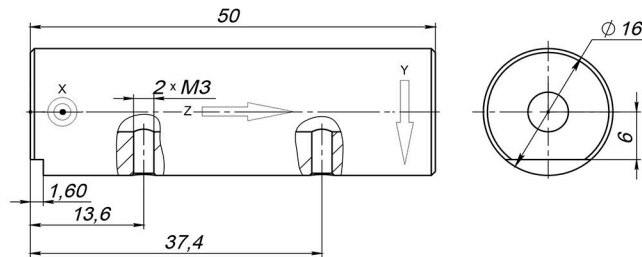
# Analog/Digital high-temperature 3-axis fluxgate magnetometer



Fluxgates housing type1:



Fluxgates housing type2:



Pcb board:

