

Three-axis Fluxgate Magnetometer

FGM3D



Features

- Measurement ranges from $\pm 4\mu\text{T}$ to $\pm 1,000\mu\text{T}$
- Low noise versions above / below dual-use rating
- Bandwidth up to 4 kHz
- Supply: $\pm 12\text{ V} \dots \pm 15\text{ V}$
- Various enclosures for airborne, borehole, land and subsea operation

Accessories

- Power supply unit MST or FGM3D SV
- Digitizer TDX, TDD or FGM3D TD
- Customized cabling

You need to precisely measure the Earth's Magnetic Field? You need to detect local magnetic fields or magnetic anomalies? – The FGM3D series of compact Fluxgate Magnetometers is the perfect solution!

With three orthogonal Fluxgate sensors within every Magnetometer, you are able to record all vectors of magnetic field lines, but also calculate the total field.

FGM3D sensors are compact, have low power

consumption and offers various customization like noise level, orthogonality of sensors elements, enclosures and sensor cabling.

The FGM3D sensors are analogue sensors and can be integrated into third party systems, as well as operated with SENSYS own power supplies and digitizers, like the Multi Sensor Terminal MST or the 10-channel ADC unit TDX for parallel and synchronized measurement campaigns.

FGM3D TECHNICAL SPECIFICATION

	FGM3D/4	FGM3D/75	FGM3D/100	FGM3D/125	FGM3D/250	FGM3D/500	FGM3D/1000
Measurement range [μ T]	± 4	± 75	± 100	± 125	± 250	± 500	$\pm 1,000$
Sensor point of reference	See housings types next page						
Declination between axes	$\leq \pm 0.5^\circ$ (Standard) / $\leq \pm 0.1^\circ$ (Option)					$\leq \pm 0.5^\circ$	
Declination total	$\leq \pm 1^\circ$ (Standard) / $\leq \pm 0.12^\circ$ (Option)					$\leq \pm 1^\circ$	
Resolution	< 150 pT						
Noise [0.1 ... 10 Hz]	>10... \leq 20 pT (Standard) / >7... \leq 10 pT (Dual-use)					> 10... \leq 20 pT	
Cut off frequency (bandwidth)	2 kHz	4 kHz		3 kHz		2 kHz	
Temperature drift	$\leq \pm 0.3$ nT/K						
Zero error	$\leq \pm 5$ nT						
Relative error of measurement	± 0.1 %					± 0.5 %	
Stability	< 5 nT						
Linearity	< 20 ppm						
Sensitivity	2.5 V/ μ T	0.13 V/ μ T	0.1 V/ μ T	0.08V/ μ T	0.04V/ μ T	0.02V/ μ T	0.01V/ μ T
Supply voltage	± 12 V ... ± 15 V						
Current consumption	± 26 mA						
Output	± 10 V @FS						
Output impedance	< 1 Ω						
Operating temperature	-20 $^\circ$ C to +75 $^\circ$ C						
Storage temperature	-40 $^\circ$ C to +80 $^\circ$ C						
Dimensions	See housings types next page						
Weight w/o cable / Volume	See housings types next page						
Ingress protection	See housings types next page						
Vibration stability	BV044 (partly)						

FGM3D TECHNICAL OPTIONS

Sensor Range	Options		Noise level		
	Code	Orthogonality	Code	@1 Hz [pT/√Hz]	
FGM3D/4	C	0,5°	0	> 10	0
				≤ 10	L
FGM3D/75	F	0,5°	0	> 10	0
		0,1°	1		
FGM3D/75-3C*	F	0,5°	2	≤ 10	L
FGM3D/75-C3T**		0,5°	3		
FGM3D/100	A	0,5°	0	> 10	0
		0,1°	1		
FGM3D/100-3C*	A	0,5°	2	≤ 10	L
FGM3D/100-C3T**		0,5°	3		
FGM3D/125	G	0,5°	0	> 10	0
		0,1°	1		
FGM3D/125-3C*	G	0,5°	2	≤ 10	L
FGM3D/125-C3T**		0,5°	3		
FGM3D/250	H	0,5°	0	> 10	0
		0,1°	1	≤ 10	L
FGM3D/250-3C*	H	0,5°	2	> 10	0
FGM3D/500	J	0,5°	0		
FGM3D/1000	K	0,5°	0	> 10	0

*3C: A calibration jump can be performed separately on each sensor axis

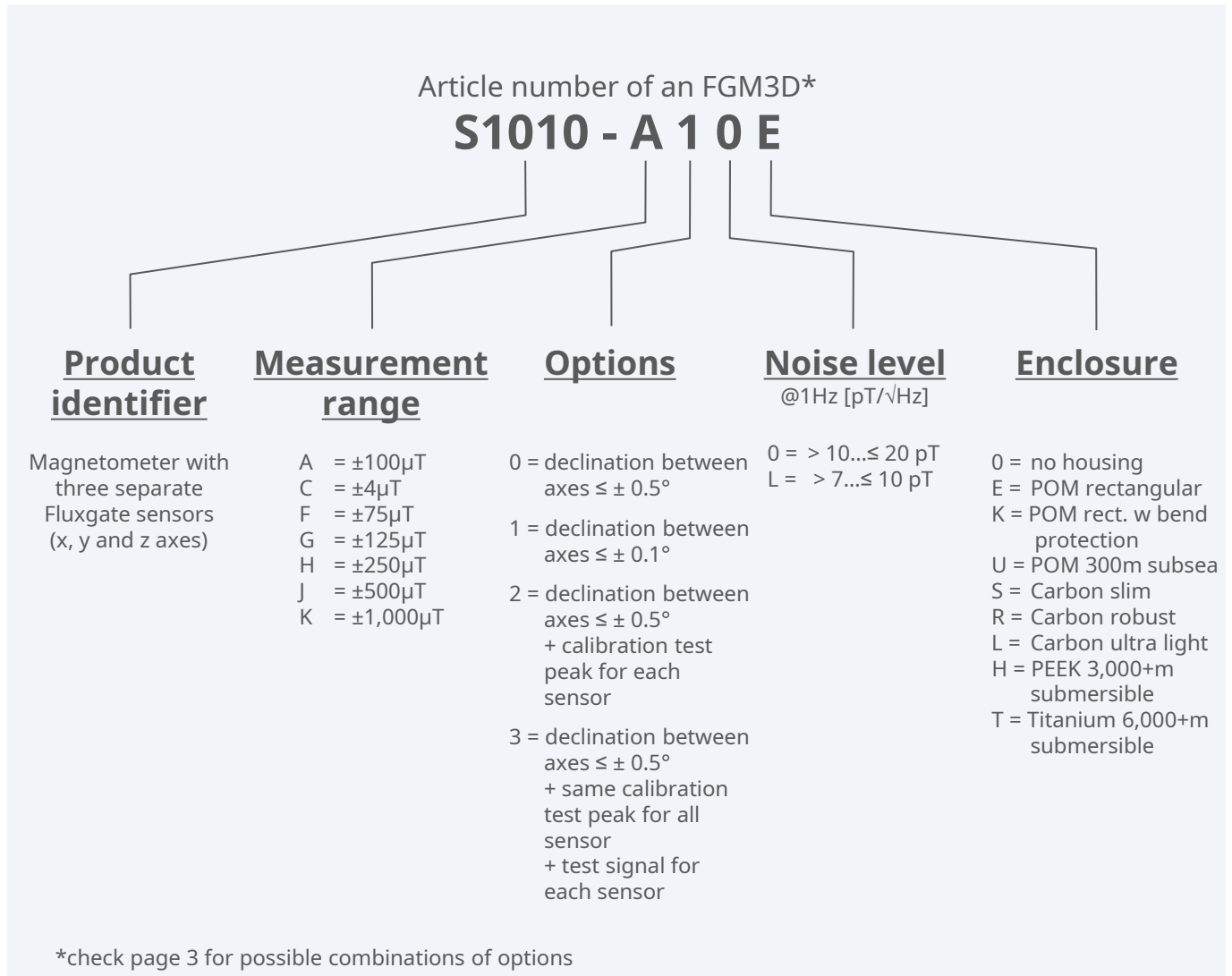
** C3T: A control input for a simultaneous calibration jump on all axes as well as a test winding on each axis for a current-dependent "test field"

FGM3D TECHNICAL OPTIONS

Housing types

Type	Sketch	Code
No housing	(no sketch)	0
Rectangular POM housing 26x26x140mm		E
Rectangular POM housing with hardwired cable and bend protection, 26x26x140mm		K
Round POM housing 300m submersible, IP68K, Ø42x210mm		U
„Slim“ Carbon tube hardwired cable and bend protection, Ø23x156.5mm		S
„Robust“ Carbon tube hardwired cable and bend protection, Ø26x156.5mm		R
„Ultra Light“ Carbon tube open, centering piece with strain relief, Ø23x130.5mm		L
„Heavy“ PEEK	(depends on customer requirements)	H
Round Titanium housing 3,000m submersible, IP68K, Ø42x210mm		T

FGM3D PART NUMBER BREAKDOWN



FGM3D Part Number Examples



S1010-F10E – FGM3D/75

- ±75μT measurement range
- improved orthogonality of ≤ ± 0.1° between axes
- non-dual use version with 10 pT < noise < 20 pT
- Standard POM rectangular housing (IP65)



S1010-A0LT – FGM3D/100

- ±100μT measurement range
- standard orthogonality of ≤ ± 0.5° between axes
- dual use version with 7 pT < noise < 10 pT
- 3,000m submersible POM housing with SubConn connector (IP68K)