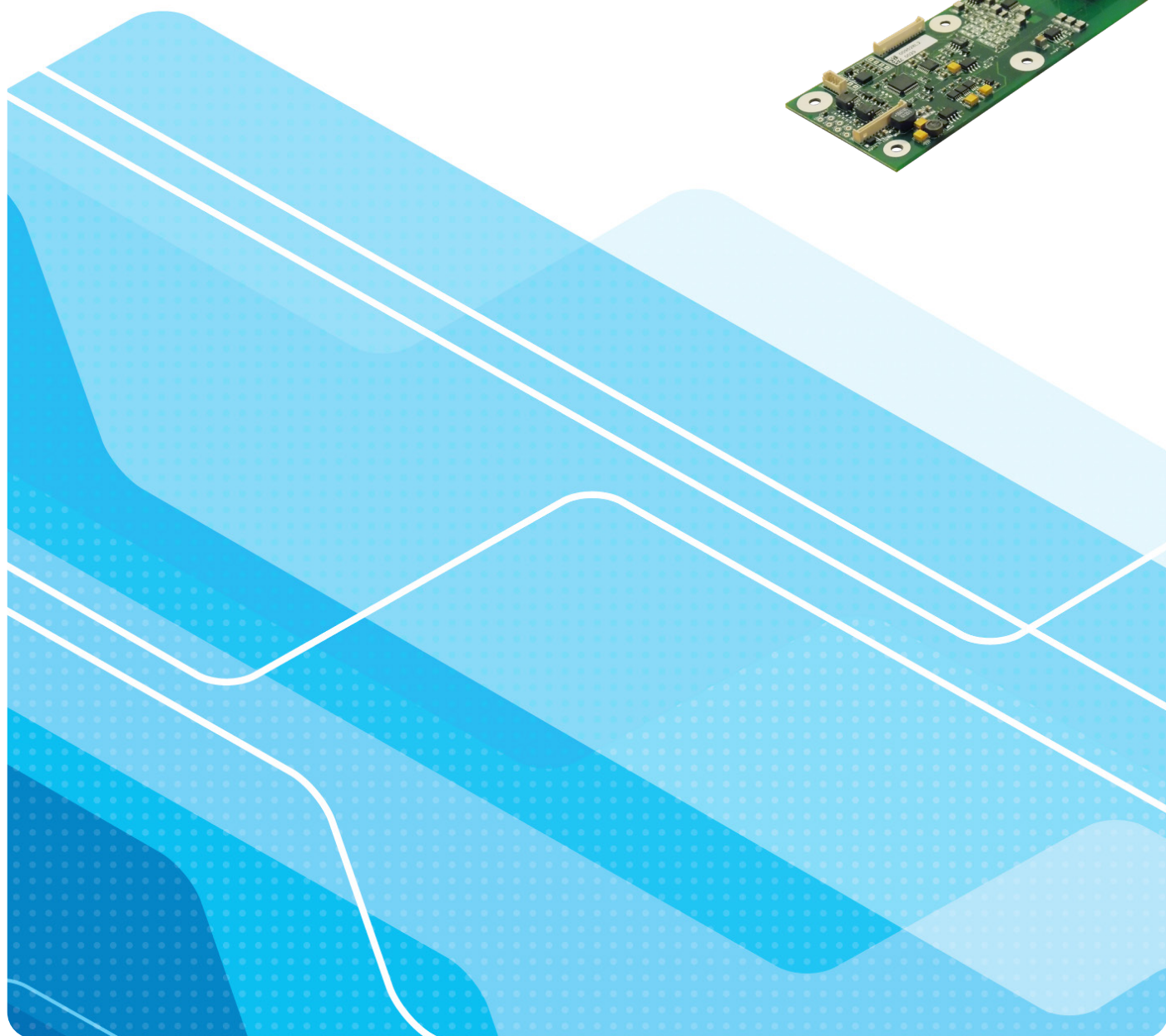
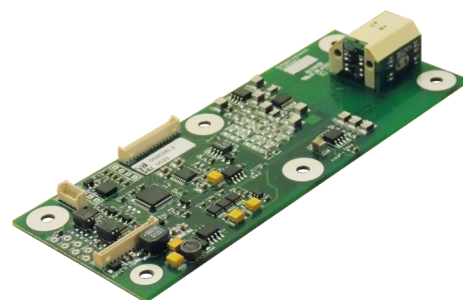
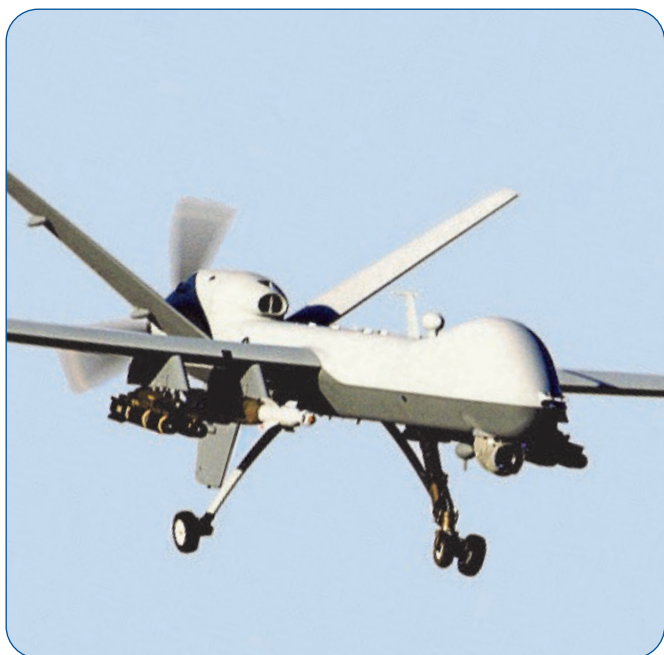


Mag658

Unpackaged Digital
Three-Axis Fluxgate Magnetometer



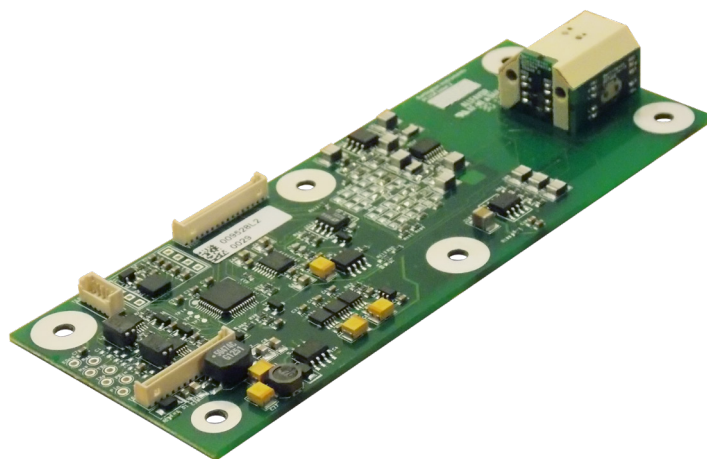


Mag658 Unpackaged Digital Three-Axis Fluxgate Magnetometer

The Mag658 enables the precise measurement of vector fields up to $524\mu\text{T}$ magnitude, in conjunction with orientation data from integrated accelerometers.

The unpackaged format and RS-422 interface makes the sensor easy to integrate directly into customers' data acquisition systems.

A Mean Time to Failure (MTTF) of over 1 million hours makes the Mag658 extremely reliable and ideal for long term installations.



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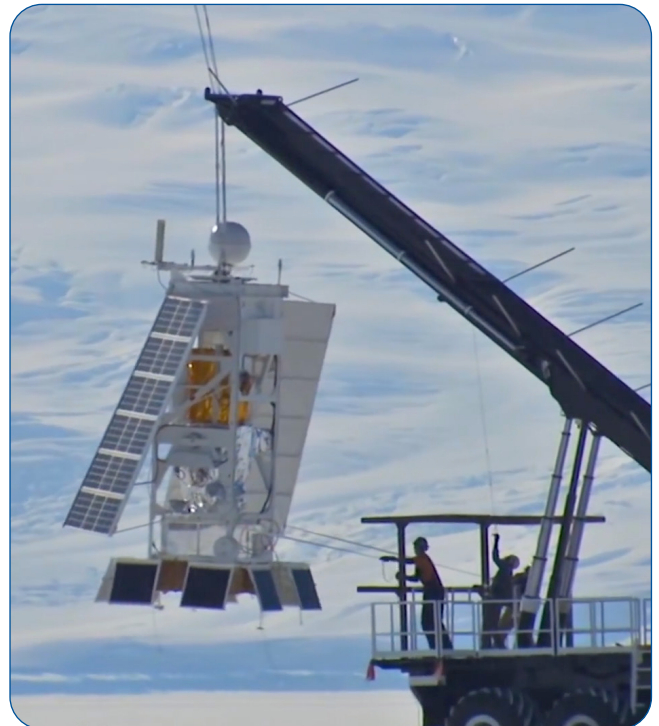
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Features

- Integral accelerometers
- RS-422 interface
- High reliability, ideal for permanent installations
- Custom package design is available

Typical Applications

- Integration in surveillance systems
- Geomagnetic field measurements
- UAV-based measurements



Mag658 Specifications

Performance	
Number of axes	Three
Polarity	+ve non-inverting output when pointing North
Measuring range	$\pm 524.287 \mu\text{T}$
Bandwidth (-3 dB)	$\geq 15\text{Hz} \pm 3\text{Hz}$
Measurement noise floor	$< 10\text{nTrms}$ (digitiser noise)
Scaling temperature coefficient	$\pm 1\text{nT}/^\circ\text{C}$
Resolution	62.5pT/bit
Start up time to data ready	At least 5s from application of power
Warm up time	15 mins
Offset	$\pm 100\text{nT}$
Temperature coefficient of offset	$\pm 3.0\text{nT}/^\circ\text{C}$
Scaling error	$\pm 0.5\%$
Orthogonality error between axes and datum	$\pm 0.5^\circ$
Linearity error (% of full scale)	0.01% (Least Squares Fit)
Frequency response ($\pm 5\%$)	DC – 5Hz ($\pm 5\%$ at DC)
Hysteresis	$< 2\text{nT}$ at 1 x full scale $< 30\text{nT}$ after 3.0 mT field exposure
Data rate	Up to 50 samples/second on all 3 axes (magnetometer data only in Auto Result mode) Up to 25 samples/second on all 3 axes (magnetometer and accelerometer data in Auto Result mode)

Accelerometers	
Range	$\pm 1.25\text{g}$
Scaling error	1% at 25°C
Scaling error change with temperature	$0.1\% \text{ FS}/^\circ\text{C}$

Environmental	
Operating temperature	-30°C to $+40^\circ\text{C}$
Storage temperature	-40°C to $+70^\circ\text{C}$
EMC Approvals	CE marked
MTTF estimation	$> 1,000,000$ hours based on manufacturer's reliability data FIT @ 55°C

Mechanical

Dimensions (W x H x L)	50mm x 20mm x 128mm
Weight	~35g
Connector	Molex Picoblade 14W 53047-1410 or solder pads
Mounting arrangements	6x M3 clearance holes

Electrical

Supply voltage (range)	+10 to 20V, 1W nominal, 1.3W (max) transmitting
Current consumption (typ/max. mA)	60-100mA quiescent at 10V; current scales inversely with voltage to 40-60 mA at 20V
Over-voltage protection	TVS diode, positive clamp voltage 22V @ 1 mA
Reverse polarity protection	Series diode – 40V max
Current limit – normal and backup limits – inrush current	Self-disconnecting if current exceeds 1A 250mA max
Power Supply Noise Rejection Ratio	Not affected by 275mVppk

Digital

Communication protocol	RS-422: 4-wire full duplex, 115.2k / 460.8k / 921.6k baud. Protocol defined by DP2778
Total cable length	300m max. when terminated
Sensors per single bus	32 max.
Data bits per axis	24



The specifications of the products described in this brochure are subject to change without prior notice.

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