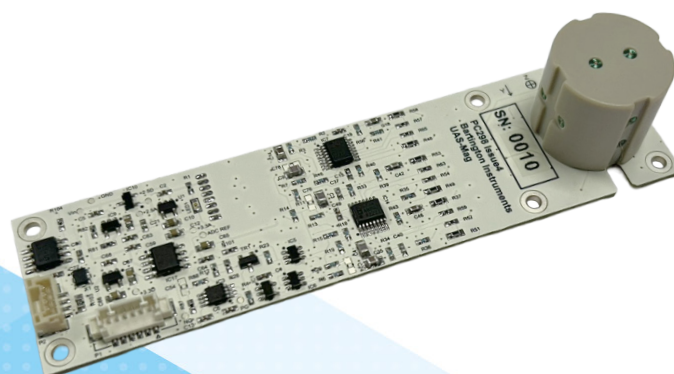


UAS-Mag[®]

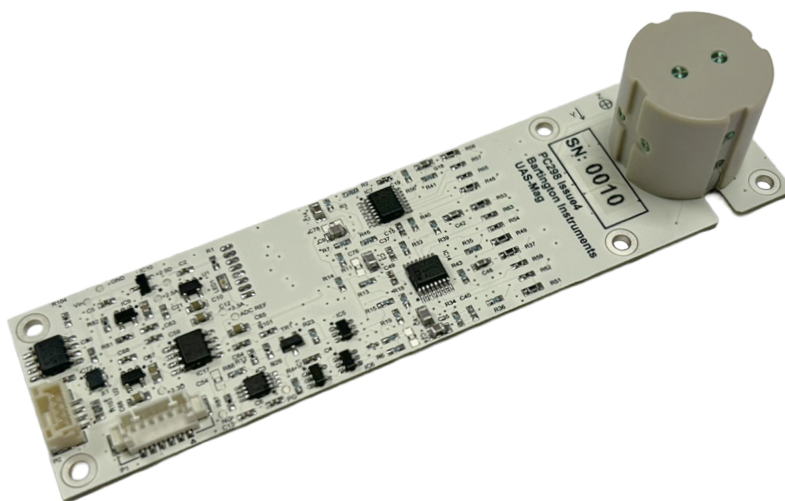
High Performance DroneCAN Magnetometer





UAS-Mag® High Performance DroneCAN Magnetometer

A 3-Axis fluxgate magnetic field sensor with a DroneCAN communication interface, for use on UAS platforms.



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Features

- Low weight
- Unpackaged for system integration
- DroneCAN (UAVCAN) communication interface
- Adjustable data output rate
- Digital offset adjustment parameters

Typical Applications

- Unmanned aircraft system navigation
- Compassing or payload measurements

Product Identification

Product name	Package	Noise	Range
UAS-Mag®	U = Unpackaged	No code = standard noise B = basic noise	105 = $\pm 105\mu\text{T}$

Example: UAS-Mag-UB105 = Unpackaged, basic noise, 105 μT range.



Specifications

Performance (Analogue Output)	
Number of Axes	Three, mutually orthogonal (Right Hand XYZ co-ordinate system)
Polarity	+ve output when pointing North
Axis Orientation	X-Axis = +ve forward (Roll) Y-Axis = +ve starboard (Pitch) Z-axis = +ve down (Yaw)
Maximum Measuring Range	$\pm 105\mu\text{T}$ (± 1.05 Gauss) $\pm 5\mu\text{T}$
Scaling Calibration Error	$< \pm 0.5\%$
Linearity Error	$< 0.02\%$
Bandwidth at -3dB	$> 300\text{Hz}$
Noise Floor	Standard Noise = $\leq 20\text{pTrms}/\text{Hz}$ @ 1Hz Basic Noise = > 10 to $\leq 40\text{pTrms}/\text{Hz}$ @ 1Hz
Zero Field Offset	$< \pm 200\text{nT}$
Perming (Magnetisation Hysteresis)	$< 2\text{nT}$ (at 1 x Full-scale, when powered)
Orthogonality	$< \pm 0.1^\circ$
Start-up/Settling time	$< 150\text{ms}$
Warm-up drift time	15 minutes



UAS-Mag® High Performance DroneCAN Magnetometer

Performance (Digital CAN Output)	
Number of Axes	Three, mutually orthogonal (Right Hand XYZ co-ordinate system)
Polarity	+ve output when pointing North
Axis Orientation	X-Axis = +ve forward (Roll) Y-Axis = +ve starboard (Pitch) Z-axis = +ve down (Yaw)
Maximum Measuring Range	$\pm 105\mu\text{T}$ (± 1.05 Gauss) $\pm 5\mu\text{T}$
Scaling Calibration Error	$< \pm 0.5\%$
Linearity Error	$< 0.02\%$ (least squares fit)
Noise Floor	Standard Noise = $\leq 20\text{pTrms}/\text{Hz}$ @ 1Hz Basic Noise = > 10 to $\leq 40\text{pTrms}/\text{Hz}$ @ 1Hz
Zero Field Offset	$< \pm 200\text{nT}$
Orthogonality	$< \pm 0.1^\circ$
Start-up/Settling time	$< 150\text{ms}$
Warm-up drift time	15 minutes
Output Data Rate	1 to 200 samples/second on all 3 axes simultaneously (selectable) (50smps default)
Communication Protocol	DroneCAN v1
DroneCAN Data Type	MagneticFieldStrength MagneticFieldStrength2

Environmental	
Operating temperature range	-40°C to $+85^\circ\text{C}$
Storage temperature range	-40°C to $+85^\circ\text{C}$
Compliance	BS EN 61326 & RoHS

Mechanical

Enclosure	Unpackaged – no enclosure
Dimensions	110 x 29 x 24mm
Weight	25g
Connector	JST-GH-4P
Solder	Unleaded Solder
Mounting Arrangements	6 x Ø2.65mm thru' holes

Electrical

Supply Voltage	+4.5V to +15V DC
Current Consumption	60mA typical @5V
Analog Output Scaling	3V balanced differential (0.15 – 3.15V) / 100 μ T
ADC	AD7767BRUZ-2 (24-bit)
ADC sample rate	1MHz
ADC output rate	31.25kSPS
Microcontroller	STM32L432KCU6
CAN Transceiver	SN65HVD230DR
Microcontroller control output 1	8192Hz (< $\pm$ 0.1%) square signal for excitation circuit (0V to 3.3V)
Microcontroller control output 2	16384Hz (< $\pm$ 0.1%) square signal for detection circuit (0V to 3.3V)

Other Information

Military Control List Classification	Standard Noise = Dual-use 6a006a3 Basic Noise = EAR99
ITAR components	No ITAR components to be used in the product



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

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