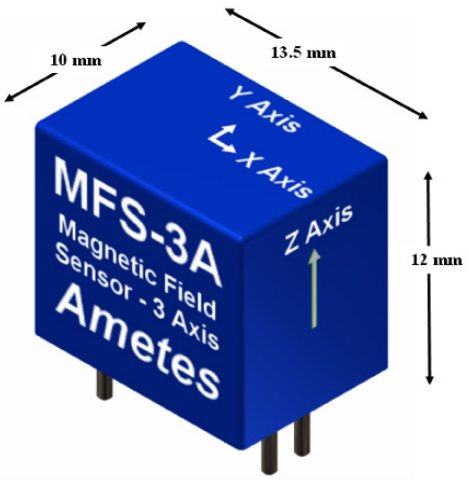
Ametes

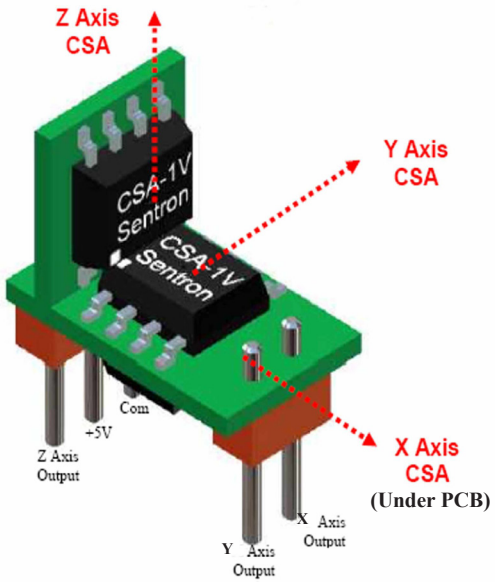
Magnetic Field Sensor - 3 Axis, MFS-3A

The high magnetic field sensitivity, accurate calibration, high stability and high signal output of the Sentron CSA-1V Hall effect IC enable it to be conveniently used to monitor the extended fields from magnetic items and electric equipment. As a demonstration of the CSA-1V capability, three CSA-1V with sensitive axes mutually perpendicular, are combined in a compact module as the MFS-3A. Three output voltages $V_X = S*B_X$, $V_y = S*B_y$ and $V_Z = S*B_Z$ are generated proportional to the magnetic flux density components B_X, B_y and B_Z with the sensitivity S = 280mV/mT over the field range of ±7.3mT. This enables calculation of the total magnetic flux density, $B = (B_X^2 + B_y^2 + B_Z^2)^{1/2} = (V_X^2 + V_y^2 + V_Z^2)^{1/2}/S$.



Specifications

* Measures B_X, B_y, B_Z
* Suitable for environmental magnetic fields
* Field range: ±7.3mT (+/-73G)
* Resolution: ±10µT (+/-0.1G)
* Three linear analog outputs V_X, V_y, V_Z of 0.5V to 4.5V
* Sensitivity: S = 280mV/mT
* Accuracy: ±3%
* Angular alignment: ±3deg
* Frequency response dc to 100kHz (-3dB)
* Small size: 10 x 13.5 x 12mm (0.39 x 0.53 x 0.47inch)
* Low weight: 2.5g (0.1oz)
* Low power: 36mA max at 5V



Applications:

* Quality assurance of magnetized materials and items such as sealing strips and permanent magnets by fast and complete characterization of the external magnetic field.
* Detection/separation of magnetic and non-magnetic materials by monitoring the modification of the local or imposed field caused by magnetic item/items.
* Non-contact, non-invasive and continuous "Condition Monitoring" of electrical motors, generators, transformers or inductors by comparing the amplitudes of selected external or "leakage" field spectral components with initial or reference values. Quality assurance of electrical components by leakage field measurement.
* Independent monitoring of the ON/OFF status of large magnets with extended fringing fields. The MFS-3A output can be used to operate warning indicators and/or interlocks. Resolution of ±10µT readily allows measurement of the 500µT (5G) safety level applicable to Magnetic Resonance Imagers (MRI).
* Wearable, battery operated "Personal Magnetic Field Detector" to immediately generate a warning to the wearer that they have entered a region of increased magnitude magnetic field.
* Magnetic field detection and warning or interlock to be incorporated in magnetically sensitive equipment such as time standards or patient support equipment that may be used in the fringe field of an MRI or other large magnet.

Europe - Senis GmbH: Technoparkstrasse 1, 8005 Zurich, Switzerland. www.senis.ch. +44 (79) 266-8756
The Americas - GMW Associates: 955 Industrial Road, San Carlos, CA 94070, USA. www.gmw.com. +1 (650) 802-8292

SPECIFICATIONS

Module Sensor

Field Measurement	Bx, By, Bz
Field Range	±7.3mT (+/-73G)
Resolution	±20µT (+/-0.1G)
Analog Output	Vx, Vy, Vz of 2.5±2.0V
Sensitivity	280mV/mT
Accuracy	±3%
Angular Alignment	±3deg
Power	36mA max at 5V

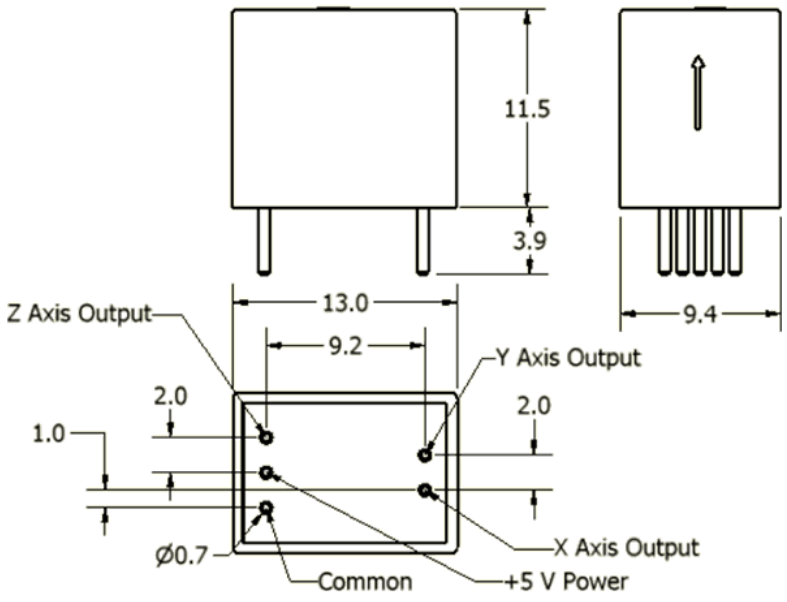
IC Electrical Characterisitics

At T=-40°C to +150°C, Vsup=4.5V to 5.5V if not otherwise specified

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Supply Current	Isup	-	11	16	mA	
Common Reference Output Voltage[1]	V_{Common}	Vsup/2 -20mV	Vsup/2	Vsup/2 +20mV	V	Iout=0mA
Bandwidth	BW	DC to 100			kHz	

Mechanical

Dimensions	10 x 13.5 x 12mm (0.39 x 0.53 x 0.47inch)
Weight	2g (0.07 oz)
Case Material	Fire Retardant Nylon 6



Europe - Senis GmbH: Technoparkstrasse 1, 8005 Zurich, Switzerland. www.senis.ch. +44 (79) 266-8756
The Americas - GMW Associates: 955 Industrial Road, San Carlos, CA 94070, USA. www.gmw.com. +1 (650) 802-8292