SUMMIT 34203A

Precision Aligned ±1 g to ±5 g Triaxial Accelerometer with Signal Conditioning and Temperature Sensor

Technical Data*

Features and Benefits

Precision Alignment
Each Axis of the 34203A is precision aligned to minimize errors due to axis misalignment or transverse sensitivity.

High Accuracy and Linearity over Wide Temperature Range
The voltage output for each axis of the 34203A is directly proportional to the acceleration along that axis. Each DC-coupled output is fully scaled, referenced, and temperature compensated. Accuracy is improved by minimizing variations due to temperature and aging effects, resulting in a sensor that is more stable over temperature than piezoelectric or piezoresistive devices. For critical applications, the built-in temperature sensor can be used to compensate for residual temperature effects.

Calibration Certificate
Each 34203A can be supplied with an optional calibration certificate listing gain, offset, and on-axis and transverse alignment parameters needed to ensure rapid and efficient system implementation. The alignment data can be used to compensate the measured values to achieve an even higher level of sensor accuracy.

Self-Test on Digital Command
A TTL-compatible self-test input causes a simulated acceleration to be injected into all three sensors to verify channel integrity.

Small Size
Complete conditioned triaxial accelerometer in less than a cubic inch.

Built-in Power Supply Regulation
Unregulated DC power from +8 to +30 volts is all that is required to measure accelerations on all axes. The 34203A is ideal for automotive applications with the ability to survive both continuous reverse battery to -20V and load dump transients to +60V.

Suitable for Harsh Environments
The 34203A is robust and can be used in harsh environments. The unit will survive 500 g powered and 1000 g unpowered.

**Data subject to change without notice*

Precisely Measure Real-World Accelerations

The Summit Instruments 34203A accelerometer has each mutually orthogonal axis precisely aligned within 3/4 degree of the theoretical ideal. This provides the accuracy required by most linear and angular measurement applications without any compensation. Critical applications requiring higher accuracy can use the alignment data provided on the optional calibration certificate to compensate for any small residual error.

Unregulated +8 to +30V DC power is all that is required to measure ±1 g, ±1.5 g, ±2 g, ±2.5 g, ±3 g, ±4 g, or ±5 g accelerations on each of three axes.
Each axial sensor has been tested over the -40 to +85°C temperature range and has a nominal full scale output swing of ±2 volts.

The zero g output level is nominally +2.5 volts. Precise values for each axis are available on an optional calibration certificate. Custom versions of the 34203A can be provided for applications which require different ranges and/or bandwidths.

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SUMMET 34203A

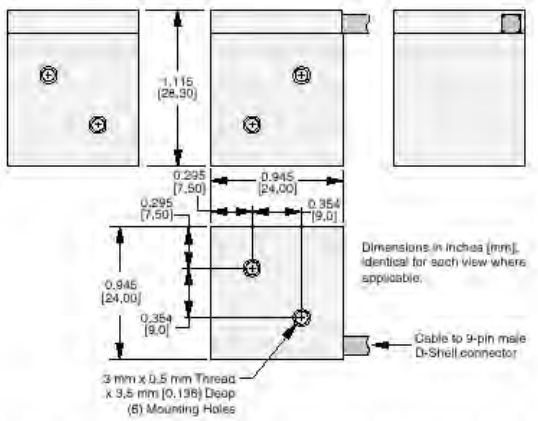
Specifications

$T_A = T_{MIN}$ to T_{MAX}, $8 \le V_S \le 30$ V, Acceleration = 0 g, unless otherwise noted.

Parameter	Min	Typical	Max	Units	Conditions/Notes
Range					
Measurement Full Scale	±1		±5	g	On each axis. Must specify via Opt. Rnnn
Shock survival, powered	-500		+500	g	Any axis for 0.5 ms. Recovers on power cycle.
Shock survival, unpowered	-1000		+1000	g	Any axis for 0.5 ms.
Sensitivity					
At 25°C, ±5 g FSR		450†		mV/g	Precise values on Opt. C001 cal certificate.
Drift T_{MIN} to T_{MAX}		±0.5		%	Percent of sensitivity at 25°C
Zero G Bias Level					
At 25°C	1.875		3.125	V	Precise values on Opt. C001 cal certificate.
Drift T_{MIN} to T_{MAX}		±0.2		g	Repeatable, can be compensated.
Alignment					Precise values on Opt. C001 cal certificate.
Deviation from ideal axes		±0.15	±0.75	degrees	Can be compensated if required.
Transverse Sensitivity		0.25		%	Inherent sensor error, excluding misalignment.
Nonlinearity		0.2		% FSR	Best fit straight line.
Upper Cutoff Frequency	4.6		10000	Hz	±10% Must specify via Opt. Bnnn.
Noise Density		0.225	0.325	mg/√ Hz	4 Hz to 1 kHz (2.25 mg rms for DC to 100 Hz)
Self Test Input Impedance	30	50		kW	To ground. Logic "1"≥2V, Logic "0"≤0.8V
Temperature Sensor					Precise values on Opt. C002 cal certificate.
Sensitivity		8		mV/°K	
+25°C Bias Level	2.4		2.6	V	
Outputs					
Output voltage swing	0.05		4.95	V	I_{OUT} = ±0.5 mA
Capacitive Drive Capability	1,000			pF	
Power Supply (V_S)					
Input voltage limits	-20		+60	V	-20V continuous, >30V if <100ms, duty <1%
Input voltage - operating	+8		+30	V	
Input current		8	12	mA	No load, quiescent.
Rejection Ratio	80	120		dB	DC
Temperature Range (T_A)	-40		+85	°C	
Mass		35		g	

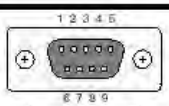
† *Scale linearly with range option Rnnn.*

Mechanical



Two 3 mm × 0.5 mm threaded holes are provided on each of three orthogonal faces for mounting.

Connections



Male D-Shell Connector

Pin	1	2	3	4	5	6	7	8	9
Signal	A1+	Signal-	A2+	+5VOut	A3+	T+	Self Test	$+V_S$	Gnd
Wire	Brown	Red	Orange	Yellow	Green	Blue	Violet	Grey	White

Ordering Information

34203AK0 34203A kit with 34170B adapter

34203A Triaxial accelerometer ±1 to ± 5 g
(-Bnnn, -Rnnn, & -Tnnn options required)

- **-Bnnn** Bandwidth 3 dB cutoff (nnn Hz)
- **-C001** Add calibration certificate
- **-C002** Add temperature calibration
- **-Rnnn** Range (nnn g FSR)
- **-Tnnn** Termination via nnn foot cable with 9-pin male D-subminiature connector at end
- **-W024** Extend warranty from 1 year to 2 years

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