

SUMMIT 15203a, 25203a, 35203a

Platinum Series

User Configurable 0 to ± 5 g

Smart Accelerometer System

15203A
25203A
35203A

Technical Data*

Features and Benefits

User Configurable Settings

The analog/digital output range and low-pass filter of each Platinum Series accelerometer axis can be set via built-in RS485 interface as can optional IRIG-106 encoded PCM output settings (channel word, subcommutation, word size, NRZ-L/RNRZ-L/Bi-Phase-L/RBi-Phase/RS485 encoding).

Compensated Serial, Telemetry and Analog Outputs

Calibrated, ranged and filtered data can be streamed out at up to 3 Mbit/sec via RS485 or IRIG-106 encoded PCM. Analog output of up to three calibrated, ranged and filtered channels are provided for compatibility with existing systems.

High Accuracy and Linearity over Wide Temperature Range

Accelerometer accuracy is improved by minimizing variations due to temperature and aging effects. Each axial sensor has been tested over the -40 to +85°C temperature range.

Built-in Calibration

Calibration data for each sensor is maintained in the accelerometer.

Self-Test

Self-test commands help verify channel integrity and wiring connections.

Small Size

Complete conditioned uniaxial/biaxial/triaxial accelerometer with digital signal processing in two cubic inches.

Built-in Power Supply Regulation

Unregulated DC power from +8 to +30 volts is all that is required to measure accelerations on all axes. Platinum Series Smart Accelerometer Systems are ideal for automotive applications as they survive both continuous reverse battery to -20V and load dump transients to +60V.

Easy Installation with Minimal Wiring Requirements

A built-in terminal block or cable with 9-pin connector simplifies wiring. Wiring can be minimized by daisy-chaining the two multidrop RS485 pins on up to 30 Platinum Series Smart Accelerometer Systems. Tapped holes on bottom and back simplify horizontal or vertical mounting.

Suitable for Harsh Environments

Platinum Series Smart Accelerometers are robust and can be used in harsh environments, they survive 500 g powered and 1000 g unpowered.

*Data subject to change without notice
Rev. 01/04



Inertial Measurements Made Fast and Easy

Summit Instruments Platinum Series Smart Accelerometer Systems are complete, easy-to-use, user-configurable Acceleration Measurement Systems containing one, two or three accelerometers, a temperature sensor, signal processor, IRIG-106 PCM encoder, RS485 interface and three analog outputs in a small, easy-to-install package.

All channels are sampled simultaneously to avoid data skewing. The digital signal processor takes 16-bit samples, filters, ranges, and calibration compensates at up to 42,500 samples/sec/channel. Digital data can be streamed out at up to 3 Mbit/sec.

The output range, filter frequency and calibration of each channel, as well as telemetry configuration, can be set by the user via the RS485 command processor. CRC-16 error checking is used to ensure command and data integrity.

The built-in temperature sensor can be used by critical applications to correct for any residual temperature effects.

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Specifications

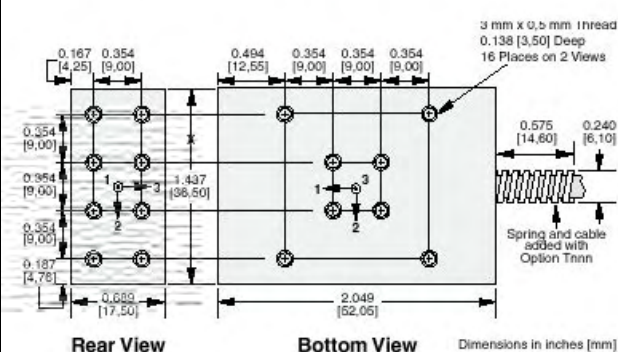
$T_A = T_{MIN}$ to T_{MAX} , Acceleration = 0 g, unless otherwise noted.

Parameter	Min	Typical	Max	Units	Conditions/Notes
Accelerometer(s)					
Maximum Full Scale Range	±5	±7		g	On each axis. User configurable
Sensitivity Drift 25°C to T_{MIN} or T_{MAX}		±0.5		%	Percent of sensitivity at 25°C
Zero G Drift 25°C to T_{MIN} or T_{MAX}		±0.2		g	Repeatable, can be compensated.
Alignment		±2.0		degrees	Deviation from ideal axes
Transverse Sensitivity		0.25		%	Inherent sensor error, excluding misalignment.
Nonlinearity		0.2		% FSR	Best fit straight line.
Upper Cutoff Frequency	1 [†]	1000 [†]	10000 [†]	Hz	User configurable
Noise Density		0.225	0.325	mg/√Hz	To 12 kHz
Noise Amplitude DC to 100 Hz		2.25		mg rms	
Temperature Sensor					
Range	-55		125	°C	
Resolution		0.25		°C	
Accuracy		±2	±3	°C	$T_A = -40$ to 85°C
Digital Signal Processor					
Internal Word Size			32	bits	
Sensor Scan Rate			42,500	Hz	User configurable, channels processed in parallel
Analog Outputs					
Voltage Swing	0.25		4.75	V	$I_{OUT} = 5$ mA
Impedance to Analog-	100	130	220	W	
Nonlinearity			0.15	% FSR	Excluding sensor nonlinearity
Digital Output Word Size					
			16	bits	Filtered, gained and calibration corrected
IRIG-106 PCM Output Rate					
			3	Mbit/sec	Based on NRZ. User Configurable
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		50		mA	
Rejection Ratio	80	120		dB	DC
Temperature Range (T_A)					
	-40		85	°C	Terminal block Opt. T000 rated to -30°C
Shock survival					
Powered	-500		+500	g	Any axis for 0.5 ms. Recovers on power cycle.
Unpowered	-1000		+1000	g	Any axis for 0.5 ms.
Mass					
		78		gram	

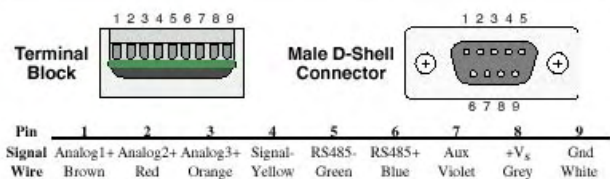
[†] Scale linearly with associated user configurable range setting

[‡] User configurable low-pass filter 3dB cutoff (number poles configurable)

Mechanical



Connections



Ordering Information

- 15203A** Uniaxial Smart Accelerometer System 0 to ±5 g
25203A Biaxial Smart Accelerometer System 0 to ±5 g
35203A Triaxial Smart Accelerometer System 0 to ±5 g
 (-Tnnn option required with all of the above)
- Tnnn** Terminal block (T000) or 4 foot cable (T004) with 9-pin male D-subminiature connector
-W024 Extend warranty from 1 year to 2 years