

# Know Your Motion

## Measure it easily and accurately with an Endevco 6DoF sensor

The Model 7360A is a six degrees of freedom (6DoF) sensor that provides analog output for three axes of linear acceleration and three axes of angular rate in a compact, roughly one inch cube package. A sensor with analog output offers the advantage of being able to troubleshoot the data to its source and examine the output compared to its time history. As opposed to inertial measurement units (IMU's) where the information has been digested and presented in a take-it-or-leave-it fashion, which is not user-friendly in a test and measurement or R&D environment.

In typical dynamic measurements, acceleration and angular rate data are essential parameters needed to fully characterize the complex behavior of a moving object. Until recently, engineers can only conveniently gather information using linear accelerometers because the massive array of sensors required to collect rotational data was impractical due to the expense and space required. With this new 6DoF sensor, professionals in automotive and aircraft development are now able to measure linear and rotational dynamics that previously required multiple sensors and much more space. Rather than having to make assumptions about these dynamic interactions, the 7360A provides reliable, empirical data to support the analytical results. In addition, the close proximity of all the CSM's (centers of seismic mass) allows for superior approximation of the vehicle/body dynamics. What makes the 7360A truly unique is that it offers low acceleration ranges and low angular rate ranges most suitable for accurately characterizing motion.



### APPLICATIONS

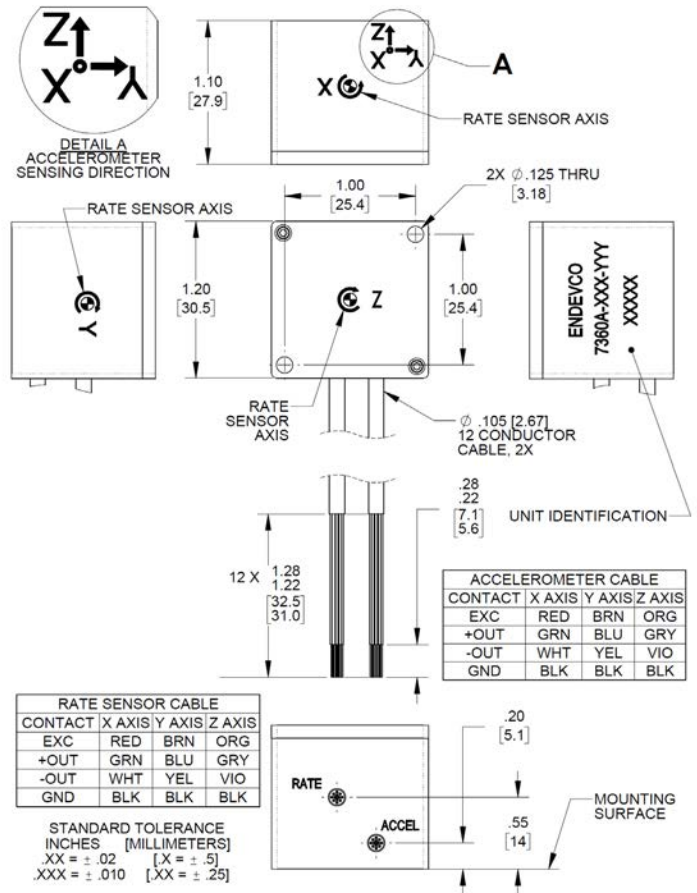
- Vehicle dynamics
- Aircraft flight testing
- Spacecraft and satellite
- Missile testing
- Automotive rollover

# Accelerometers for motion and vibration measurements



## 7360A

<b>Description</b>	Six degrees of freedom sensor Compact package with 2 cables Option M1 for 5V
<b>Shock limit g</b>	5000
<b>Operating temperature °C [°F]</b>	-40 to +100 [-40 to +212]
<b>Dimensions mm (in)</b>	30.5 x 30.5 x 27.9 [1.2 x 1.2 x 1.1]
<b>Weight grams (without cables)</b>	35
<b>Cable type</b>	2 cables, 12x #30AWG Cond PFA insulated, braided shield, PU jacket
<b>Humidity</b>	IP67
<b>Accelerometer excitation voltage Vdc</b>	7 to 36 or 5V (M1 option)
<b>Rate excitation voltage Vdc</b>	5 to 16
<b>Mounting method</b>	4-40 screws



Accelerometer		-2	-10	-50	-200	-500	
Range	g	±2	±10	±50	±200	±500	
Sensitivity	mV/g	1000	200	40	10	4	
(tolerance)	mV/g	±50	±10	±2	±1.0	±0.3	
Frequency response							
(±1dB, ref 100 Hz) max	Hz	0-300	0-1500	0-1800	0-1800	0-1800	
(±3dB, ref 100 Hz) typical	Hz	0-550	0-2500	0-2800	0-5000	0-5000	
Zero measurand output	mV	±50	±50	±50	±50	±50	
Transverse sensitivity (typical)	%	3.0	3.0	3.0	3.0	3.0	
Thermal zero shift (max)	%FSO	±2.0	±2.0	±2.0	±2.0	±2.0	
-40°C to +100°C (-40°F to +212°F)							
Thermal sens shift (max)	%	±2.0	±2.0	±2.0	±2.0	±2.0	
-40°C to +100°C (-40°F to +212°F)							
Combined non-linearity and hysteresis (typical)	%FSO	±0.5	±0.5	±0.5	±0.5	±1	
Threshold (resolution) [2]	equiv. g's	.0002	.001	.005	.02	.05	
<b>Angular rate sensor</b>		<b>-100</b>	<b>-500</b>	<b>-1K5</b>	<b>-8K</b>	<b>-12K</b>	<b>-18K</b>
Range	deg/sec	±100	±500	±1500	±8000	±12000	±18000
Sensitivity (±15%)	mV/deg/sec	20	4	1.333	0.25	0.167	0.111
Frequency response							
(+1dB/-3dB, ref 100 Hz)	Hz	0-1000	0-1000	0-1000	0-1000	0-2000	0-2000
Cross axis sensitivity	%	<1	<1	<1	<1	<1	<1
Thermal zero shift (max)	%FSO	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5
-40°C to +105°C (-40°F to +221°F)							
Thermal sens shift (max)	%	±2.0	±2.0	±2.0	±2.0	±2.0	±2.0
-40°C to +105°C (-40°F to +221°F)							
Zero measurand output	mV	±100	±100	±100	±100	±100	±100
Non-linearity (max)	%FSO [1]	±0.5	±0.5	±0.5	±0.5	±0.5	±0.5
Residual noise (passband)	mV RMS	3.4	3.2	2.5	2.1	1.8	1.8

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