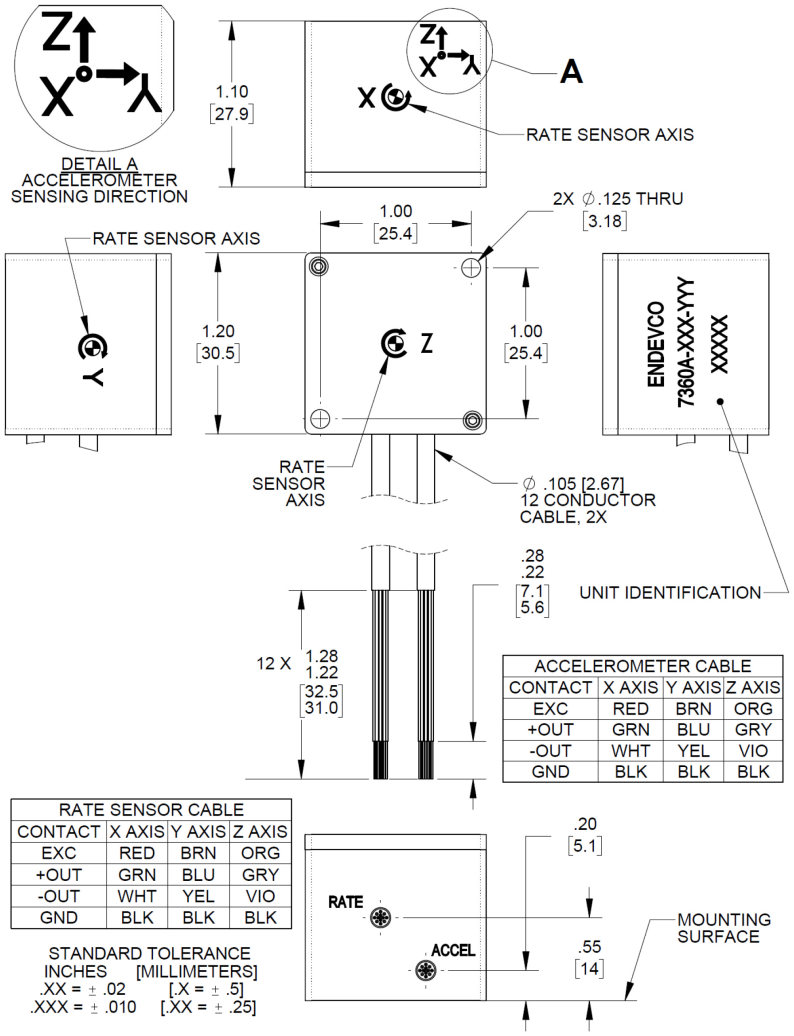
ENDEVCO
AN AMPHENOL COMPANY

6 Degrees of freedom sensor

Model 7360A



ACCELEROMETER CABLE			
CONTACT	X AXIS	Y AXIS	Z AXIS
EXC	RED	BRN	ORG
+OUT	GRN	BLU	GRY
-OUT	WHT	YEL	VIO
GND	BLK	BLK	BLK

RATE SENSOR CABLE			
CONTACT	X AXIS	Y AXIS	Z AXIS
EXC	RED	BRN	ORG
+OUT	GRN	BLU	GRY
-OUT	WHT	YEL	VIO
GND	BLK	BLK	BLK

STANDARD TOLERANCE
INCHES [MILLIMETERS]
.XX = ± .02 [.X = ± .5]
.XXX = ± .010 [.XX = ± .25]

Key features

- Three axes of acceleration and three axes of angular rate
- Multiple ranges available
- Compact package with two 12 conductor cables
- Rugged to 5,000 g shock
- Request 7360AM1 for 5 V operation

Description

The ENDEVCO Model 7360A is a six-degrees of freedom (6DOF) sensor that features three DC accelerometers and three angular rate sensors packaged in a compact enclosure. This 6DOF sensor is designed specifically for automotive safety testing, aerospace testing and other testing in harsh shock and vibration environments requiring accurate measurement of accelerations and angular velocity. The 7360A 6DOF sensor features various accelerating ranges including ±2, ±10, ±50, ±200, ±500g and angular rate ranges including ±100, ±500, ±1500, ±8000, ±12000 and ±18000 deg/sec, and provides full scale voltage output of ±2Vpk.

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Specifications

Dynamic characteristics

All specifications assume +75°F (+24°C) and +15 Vdc excitation (accelerometer) and +7 Vdc (rate sensor) unless otherwise stated.

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
Natural frequency, (typical)	Hz	1300	2700	5500	9800	18,000
Threshold (resolution) [2]	equiv. g's	.0002	.001	.005	.02	.05

Angular rate sensor		**-100**	**-500**	**-1K5**	**-8K**	**-12K**	**-18K**
Range	deg/sec	±100	±500	±1500	±8000	±12000	±18000
Sensitivity (±15%)	mV/deg/sec	20	4	1.333	0.25	0.167	0.111
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
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°Fto +221°F)							
Residual noise (passband)	mV RMS	3.4	3.2	2.5	2.1	1.8	1.8

Electrical

Accelerometer	
Excitation voltage	7 to 36 Vdc
Current drain	8mA max each accelerometer axis, 24 mA max total
Output impedance	100 ohms max
Load	10K ohms resistance minimum
	50 pF capacitance maximum
Residual noise	50 µVrms typ; 0.5 to 100 Hz
	500 µVrms typ; 0.5Hz to 10 kHz
Maximum excitation voltage without damage	45 Vdc
Input voltage protection	Reverse polarity protected
Insulation resistance	100 Meg Ohms minimum at 50 Vdc
	Case to leads shorted together
	Shield to leads shorted together
Warm-up time (to within 1% of final output value)	<100 ms

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Electrical	
Rate sensor	
Excitation voltage	5 to 16 Vdc
Current drain	6 mA max each rate sensor axis, 18mA max total.
Output impedance	200 ohms max
Maximum excitation voltage without damage	20 Vdc
Common mode voltage (±5%)	2.5 Vdc
Full scale output voltage (±15%)	±2 Vpk
Insulation resistance (@100vdc)	>100 MΩ
Warm-up time (to within 1% of final output value)	<100 ms
Physical	
Weight (typical)	35 grams (without cable)
Case material	Anodized aluminum alloy
Cable type	2 cables, 12x #30AWG Cond PFA insulated, braided shield, PU jacket
Mounting/torque	2x #4-40 or M3 Mounting Screw/ 6 lb-in (0.68 N-m)
Environmental	
Acceleration limits (in any direction)	
Shock Limit	5000g
Temperature	
Operating Range	-40°F to +212°F (-40°C to +100°C)
Storage Range	-40°F to +212°F (-40°C to +100°C)
Humidity	IP67
Calibration data	
Accelerometer	
Sensitivity	Measured at 1g and 100 Hz for the -2
(Measured with +15 Vdc excitation)	Measured at 10 g and 100Hz for the -10, -50, -200 and -500
Zero measurand output	Measured at +15 Vdc and room temperature
Frequency response	Measured at 1g, 20 to 1000 Hz for the -2
(Measured with +15 Vdc excitation)	Measured at 10 g, 20 to 10000 Hz for the -10, -50,-200 and -500
Rate sensor	
Sensitivity (Measured with +7 Vdc excitation)	Measured at 100 deg/s for -100, 500deg/s for -500, 1500 deg/s for -1K5, and 3000 deg/s for -8K, -12K and -18K
Zero measurand output	Measured at +7 Vdc excitation and room temperature
Non-linearity (Measured with +7 Vdc excitation)	Measured within range ±100 deg/s for -100, ±500 deg/s for -500, ±1500 deg/s for -1K5, and ±3000 deg/s for -8K, -12K and -18K

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Accessories

Product	Description	7360A
EH866	4-40 X 1 1.4 Socked Head Cap Screw, 2X	Included
EHW289	#4 Flat Washer, 2X	Included

Notes

1. Full scale output (FSO) is nominally 4 volts.
2. Threshold = 2x max. Residual noise; .5 To 100Hz/sensitivity
3. Model number definition:

7360A - XXX - YYY - ZZZ

- ZZZ: Cable length in inches, i.e. 7360A-XXX-YYY-120 has 2 cables, each with a length of 120 inches [3.5M]. Tolerance between the two may vary, as long as both cables are inside the tolerance range.
- YYY: Denotes range of angular rate
  -100 = ±100deg/sec, -500 = ±500deg/sec, -1K5 = ±1500deg/sec,
  -8K = ±8000deg/sec, -12K = ±12000deg/sec,
  -18K = ±18000deg/sec
- XXX: Denotes range of acceleration
  -2 = 2g, -10 = 10g, -50 = 50g, -200 = 200g, -500 = 500g
- 7360A: Basic Model Number

Ordering information

1. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 866-ENDEVCO for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.