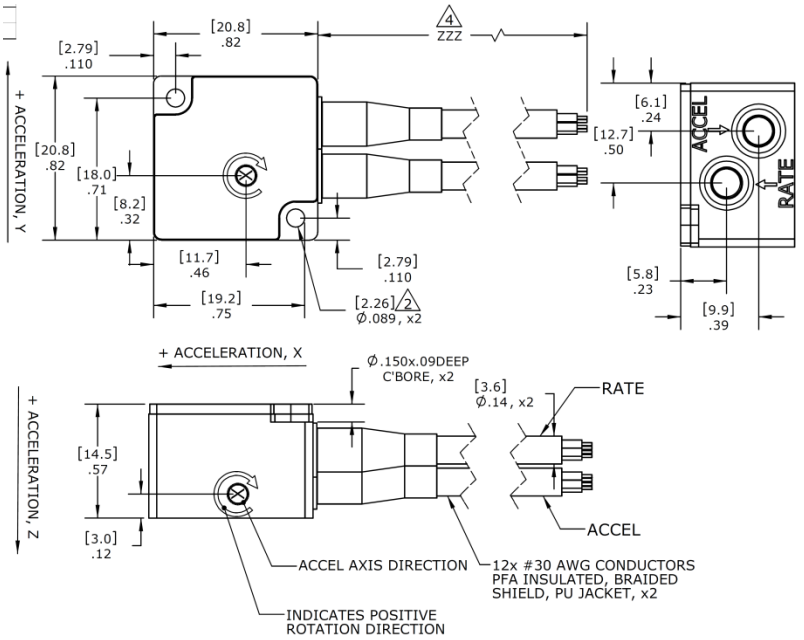
Model 633 Six-Degree of Freedom Sensor

Angular Rate Range:
±500 to ±24,000°/sec
Linear Acceleration Range:
±50 to ±6,000 g
Silicon MEMS, DC Response
Insensitive to Shock

The Model 633 6-DOF Sensor

is an analog sensor that consists of the outputs of three gyroscope/rate sensors and three DC accelerometers in one small package. The rate sensors and accelerometers are aligned orthogonally to each other which allow the user to measure motions in all 6 degrees of freedom (6 DOF). Designed specifically for product research and development in harsh environments, the Model 633 can maintain its precision under high shock condition. Two flexible integral cables, one for rate and one for acceleration, carry the 6 individual channels of voltage signal.

dimensions

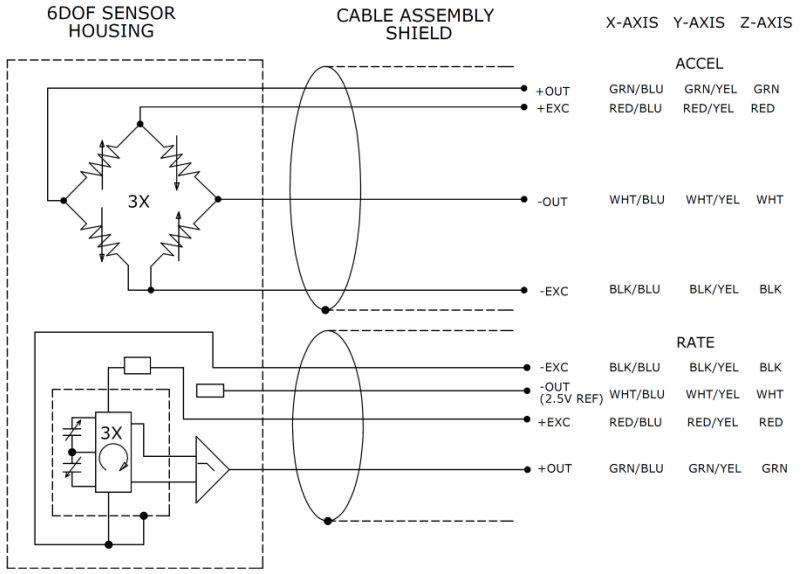


FEATURES

- Specify from ±500 to ±24,000°/sec
- Specify from ±50 to ±6,000 g
- 5-16Vdc Excitation (rate sensors)
- 2-10Vdc Excitation (accelerometers)
- -40 to +105°C Temperature Range
- Shock Resistant Package

APPLICATIONS

- Auto Safety Testing
- Weapons Instrumentation
- Pedestrian Impact
- Rollover Testing
- Motorsports
- Biomechanics Testing
- Robotic System Design



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All values are typical at +24°C and 12Vdc excitation unless otherwise stated. Measurement Specialties reserves the right to update and change these specifications without notice.

Parameters							
DYNAMIC (Rate Sensor)							**Notes**
Range (deg/sec)	±500	±1500	±6000	±12K	±18K	±24K	
Sensitivity (mV/deg/sec)	4.00	1.33	0.333	0.167	0.111	0.083	Not ratiometric
Frequency Response (Hz)	0-1000	0-1000	0-1000	0-2000	0-2000	0-2000	+1dB/-3dB
Non-Linearity (%FSO)	±0.5	±0.5	±0.5	±0.5	±0.5	±0.5	BFSL
Cross-Axis Sensitivity (%)	<1	<1	<1	<1	<1	<1	
Residual Noise (mV RMS)	3.66	1.20	3.30	1.22	1.50	1.50	Passband
DYNAMIC (Accelerometer)							
Range (g)	±50	±100	±200	±500	±2000	±6000	
Sensitivity (mV/g)	2.00	0.90	0.90	0.40	0.15	0.10	
Frequency Response (Hz)	0-1000	0-1200	0-1500	0-2000	0-5000	0-5000	
Resonant Frequency (Hz)	4000	6000	8000	10000	23000	26000	
Non-Linearity (%FSO)	<1	<1	<1	<1	<1	<1	
ELECTRICAL							
Zero Velocity Output (mV)	±100						Differential
Zero Acceleration Output (mV)	±25						Differential
Excitation Voltage (Vdc), Rate Sensor	5 to 16						Non-ratiometric
Excitation Voltage (Vdc), Accelerometer	2 to 10						Ratiometric
Excitation Current (mA) , Rate Sensor	<8						
Excitation Current (mA) , Accelerometer	<4.0						@10Vdc ext
Influence of Linear Acceleration to Rate Sensor (deg/sec/g)	0.1						
Common Mode Voltage, Rate Sensor (Vdc)	2.5						±5%
Full Scale Output Voltage, Rate Sensor (Vpk)	±2						±15%
Output Resistance, Rate Sensor (Ω)	400						
Input Impedance, Accelerometer (Ω)	2400 to 6000						
Insulation Resistance (MΩ)	>100						@100Vdc
Turn On Time, Rate Sensor (msec)	<100						
Ground Isolation	Isolated from Mounting Surface						
ENVIRONMENTAL							
Thermal Zero Shift, Rate Sensor (%FSO)	±2.5						-40 to +105°C
Thermal Sensitivity Shift, Rate Sensor (%)	±2.0						-40 to +105°C
Operating Temperature (°C)	-40 to +105						
Humidity (Active Element & Electronics)	Hermetically Solder Seal						
Humidity (Housing)	Epoxy Sealed, IP65						
Shock Limits (g)	5000						
PHYSICAL							
Case Material	Anodized Aluminum						
Cable (2x)	12x, #30 AWG Conductors, PFA Insulated, Braided Shield, PU Jacket						
Weight (cable not included)	<8.5 grams						
Mounting	Clearance holes for 2x 2-56 UNF or M2						
Mounting Torque (lb-in (N-m))	4 (0.45)						
Calibration supplied	CS-ARLIN NIST Traceable						

ordering info

PART NUMBERING Model Number+Range+Cable Length+Options

633-GGG-RRR-ZZZ-XX

- I I I I_____Special requirements, otherwise leave blank
- I I I_____ Cable (120 is 120 inches)
- I I_____ Range (-500 for 500deg/sec, -1K5 is 1500deg/sec, -12K is 12,000deg/sec)

I_____ACCEL RANGE (g) -050 for 50g, -500 for 500g, -2K for 2000g

Example: 633-050-500-360 is a Model 633 with 50g, 500deg/sec, 360" (30ft) Cable, No Options

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