idealphotonics

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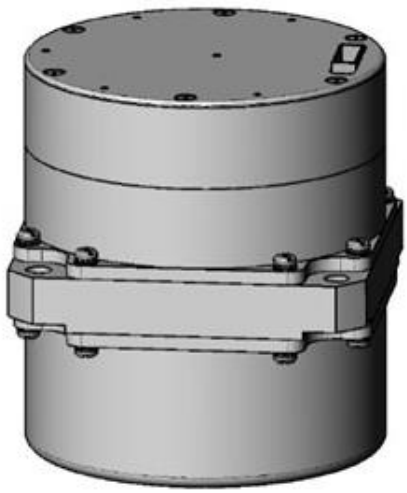
IMU30S Inertial Measurement Unit(IMU)



Fogphotonics's high performance Inertial Measurement Units (IMU) employs the latest FOG and linear acceleration technology. The IMU contains three FOG sensors and three accelerometer sensors, including the support electronics and algorithms.The IMUs provides fully compensated measurements of angular rates and linear accelerations suitable for navigation, stabilization, and flight control. The IMUs are manufactured in several form factors using the same inertial sensors, electronic design, and basic parts making the IMU cost and size competitive. Our IMUs are ideal candidates for any demanding applications.Our IMUs are intended for use in a multitude of applications. The units deliver fully-compensated angular rates and linear accelerations. The sensors are classified and categorized according to their Bias instability, Noise performance and dynamic ranges.

Feature

Excellent cost to performance ratio
ITAR free
Industry standard Volume
Mechanical shock absorbers
Closed loop FOG
Rebalanced accelerometers

Applications

Navigation
Line of sight stabilization
Flight control

Performance

Parameter	Units	Value
Gyro Dynamic Range	°/sec	±500
triaxial axis angular velocity scale factor nonlinearity, asymmetry	1σ, ppm	≤300
Triaxial axis angular velocity scale factor repeatability	1σ, ppm	≤300
triaxial axis angular velocity bias stability at room temperature	10s, 1σ, °/ h	≤0.5
Triaxial axis angular velocity Room temperature bias repeatability	1σ, °/ h	≤0.5
triaxial axis angular velocity bias stability full temperature	10s, 1σ, °/ h	≤1
triaxial axis angular velocity random walk	$°/\sqrt{h}$	≤0.05
△Bias in Vibration towards before vibration and after vibration	°/h	≤1
△Bias(before vibration and after vibration)	°/h	≤0.3
Triaxial acceleration measurement range	g	30
Triaxial accelerometer scale factor repeatability	1σ, ppm	≤300
Triaxial accelerometer scale factor nonlinearity	1σ, ppm	≤300
Triaxial axis accelerometer bias repeatability	1σ, g	$\leqslant 5\times10^{-4}$
Triaxial accelerometer bias stability	1σ, g	$\leqslant 5\times10^{-4}$
Start Time	min	＜5
Store Temperature	℃	-55-+85
Operation Temperature	℃	-45-+65
Color		Black anodized
Weight	g	950±50
Interface	NA	J30J-21ZKP 3
Voltage	V	18-36
Power consumption(Steady)	W	at 28V operating voltage, Room temperature <10W, the full temperature <12W;

Power consumption (Transient)	W	Working at 28V voltage, ≤10W (start).

Swept frequency vibration

Test Method: 10 ~ 2000 ~ 10Hz, Swept frequency rate 1oct / min, in X, Y, Z three directions.

Index requirements: △Bias in Vibration towards before vibration and after vibration≤1 °/ h, △Bias(before vibration and after vibration) ≤0.3 °/h.

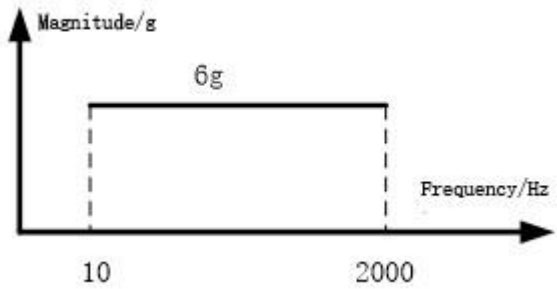


Figure 1. Swept frequency vibration

Random Vibration

Test Method: Each direction of vibration time: 5min, X, Y, Z each time, vibration power spectral density is shown in Figure 3.

Index requirements:△Bias in Vibration towards before vibration and after vibration≤1 °/ h, △Bias(before vibration and after vibration): ≤0.3 °/h.

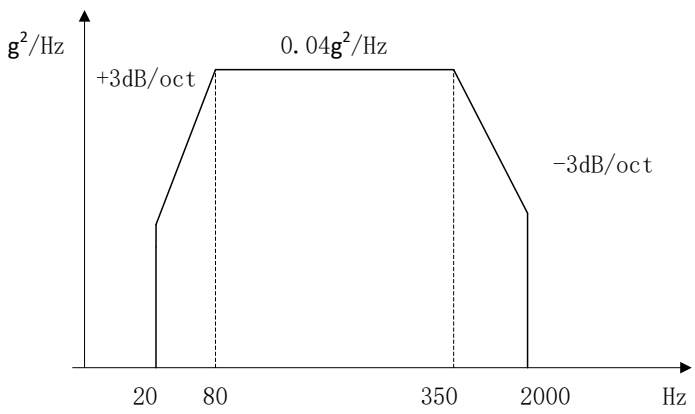


Figure 2. Random vibration power spectral density graph (with vibration 6.06g)

Shock

20g, 11ms, half-sine, 3 directions, 3 times per direction;

△Bias(before vibration and after vibration) Must be: ≤0.3 °/ h.

Dimensions

Dimensions: Φ (90±0.1) mm ×(90±0.1) mm×(102 ±0.5) mm, shown in Figure 1,
Installation pitch: (75±0.05) mm ×(75±0.05) mm, mounting screw :M6.

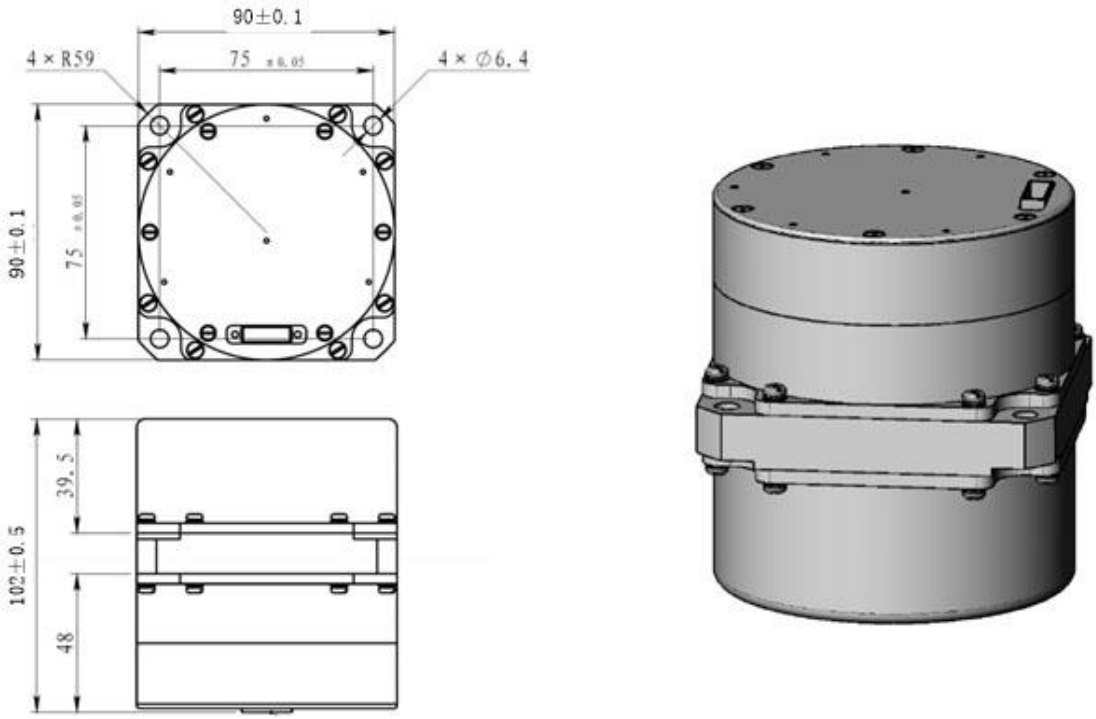


Figure 3 IMU30S Dimensions