



# IMU 42

## Inertial Measurement Unit



### OVERVIEW

The IMU 42 family employs the latest closed-loop fiber-optic gyro (FOG) and linear rebalanced accelerometer technology. It is a small, lightweight, high performance strap-down Inertial Measurement Unit (IMU), suited for navigation, line of sight stabilization and flight control. The IMU 42 is available in multiple configurations to meet different price and performance requirements.

### SYSTEM HIGHLIGHTS

**ARW: 0.02-0.008°/√hr.**

- Jitter performance improvement
- Improved LOS stabilization

**Scalable bias performance: 0.5°-0.1°/hr.**

- CEP improvement
- Support future accuracy upgrades

Closed loop FOG and linear rebalanced accelerometers

Mechanical shock absorbers – optional

Industry standard volume – 0.5 litre

ITAR free

### IMU 42

The IMU 42 is a 0.5 degree/hr gyroscope, 300 mg accelerometer IMU with low ARW for superior performance.

### IMU 42XP (Enhanced Performance)

IMU 42-XP is a 0.1 degree/hr IMU. Increased gyro performance with the same form factor as the standard IMU 42.

Over the past 15 years Cielo's field proven IMUs have been tested and combat proven on a variety of operational applications, such as rocket systems, accurate munitions, payloads, UAVs, civilian aircraft protection systems and many more.

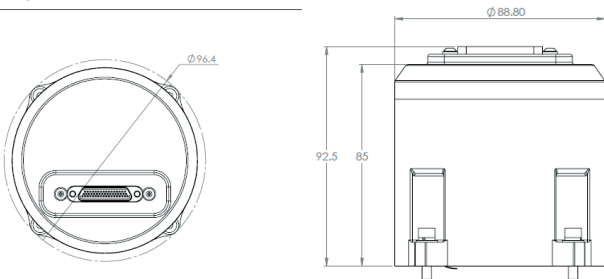
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PARAMETER	IMU 42-CV	IMU 42	IMU 42-XP
<b>GYRO</b>			
Gyro Bias Short Term Over Temp. (1 sigma)	>1°/hr.	<0.5 °/hr.	<0.1 °/hr.
Gyro Angular Random Walk	0.07 °/√hr	0.02 °/√hr	0.008 °/√hr
Gyro Scale Factor Short Term Over Temp. (1 sigma)	<100 PPM	<150 PPM	<150 PPM
Gyro Dynamic Range	±1000 °/sec.	±2000 °/sec.	±1000 °/sec.
<b>ACCELEROMETER</b>			
Accelerometer Bias Short Term Over Temp. (1 sigma)	<2000 µg	<300 µg	<300 µg
Accelerometer Threshold	100 µg	10 µg	10 µg
Accelerometer Scale Factor Short Term Over Temp. (1 sigma)	1500 PPM	300 PPM	300 PPM
Accelerometer VRE	250 µg/g <sup>2</sup>	20 µg/g <sup>2</sup>	20 µg/g <sup>2</sup>
Accelerometer Range	±30/±50 g	±30/±50 g	±30/±50 g
<b>CHARACTERISTICS</b>			
Size	0.45 Liter		
Weight	840 Grams		
Power	15 W		
Temperature	-40 to 71°C		
Temperature Gradient	3 °C/min		
Power Input	±15, 5 VDC		
Interface	SDLC, RS422		
Data Rates	100 to 4800 Hz		
Sync	External or Internal		



OPTIONAL FEATURES	IMU 42-A	IMU 42-B	IMU 42-C	IMU 42-D	IMU 42-E
Nav message rates	100Hz	400Hz	1200Hz	360Hz	200Hz
Ctrl. message rates	600Hz	N/A	N/A	3600Hz	4800Hz
Acc range	±30g	±50g	±60g	±30g	±4.6g
Gyro range	1000°/s	1500°/s	2000°/s	2000°/s	Nav=162°/s Ctrl=200°/s

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