

Laser Inertial Measurement Unit 32

1. Brief introduction

IMU32 is a miniaturized, medium high accuracy laser inertial measurement unit. With 3 laser gyroscopes, embedded data processing system, secondary power supply module inside, the accelerometer and acquisition circuit of accelerometer, the angular/line motion of carrier's relative inertial space can be detected.



2. Main Features

(1). Calibration free

The IMU level error calibration is completed, which is convenient for users' engineering application.

(2). Super scalability

The installation position of three axis accelerometer and accelerometer acquisition circuit can be reserved.

The installation position of GNSS receiver, and the antenna interface can be reserved.

Selectable secondary power supply module. (Basic + extended power)

(3). Stable performance, strong environmental adaptability

It can be applied in environmental requirements of military grade.

3. Main Performance

Sr. No	Parameter	Technical index
Ring Laser Gyro		
1	Bias	± 0.1 (°) /h
2	Bias stability	Grade A: ≤ 0.010 (°) /h Grade B: ≤ 0.015 (°) /h Grade C: ≤ 0.020 (°) /h
3	Bias repeatability	Grade A: ≤ 0.010 (°) /h Grade B: ≤ 0.015 (°) /h Grade C: ≤ 0.020 (°) /h
4	Bias magnetic sensitivity	Grade A: ≤ 0.010 (°) /h/G Grade B: ≤ 0.015 (°) /h/G Grade C: ≤ 0.020 (°) /h/G
5	Random Walk coefficient	≤ 0.003 (°) /h ^{1/2}
6	Scale factor non-linearity	≤ 5 ppm
7	Input axis misalignment angle	$\leq 10''$
Accelerometer		
8	Bias stability	$\leq 5 \times 10^{-5}$ g
9	Bias repeatability	$\leq 5 \times 10^{-5}$ g
10	Scale factor stability	≤ 30 ppm
11	Scale factor repeatability	≤ 30 ppm
Measurement Range		
12	Angular rate measurement range	$\pm 300^\circ/\text{s}$, $\pm 500^\circ/\text{s}$ (Selectable)
13	Linear acceleration	$\pm 15\text{g}$, $\pm 40\text{g}$ (Selectable)
Physics performance		
14	Start time	≤ 20 s
15	Outer dimension (mm)	$(202 \pm 1) \times (194 \pm 1) \times (135 \pm 1)$
16	Installation interface	8 M5 Threaded holes, 4 on each side $(145 \pm 0.1) \text{ mm} \times (137 \pm 0.1) \text{ mm}$
17	Weight (kg)	< 8 kgs

18	Power	+28V, +12V, -12V, -12V, -12V, -12V
19	Power dissipation	Start: 100w Working: 50w
Environmental suitability		
20	Working temperature	-40°C ~ 70°C
21	Storage temperature	-45°C ~ 75°C
22	Shock	40g, 11ms, Half sine/final peak saw tooth
23	Vibration	Sine: 10Hz-500Hz, 5g Random: 10Hz-200Hz, 0.015g ² /Hz
Interface		
24	Electrical interface	Power interface, rectangular electric connector: J30J-37ZK Communication interface: RS422
25	Connector cable length	Default: 210mm±5mm
26	Communication interface	RS232, RS422 (Selectable)
27	Band Rate	115200bps
28	Data refresh rate	100Hz

4. Applications

- (1) Various strapdown high accuracy positioning and orientation device.
- (2) Inertial/GNSS integrated navigation system.
- (3) Mobile measurement system.
- (4) High-speed rail and expressway measurement system.
- (5) Precision aerial photography.
- (6) Aerial mapping.
- (7) Printing equipment detection.
- (8) Underwater and underground navigation mapping.