9181 Series Inertial Reference Unit

Inertial reference system for 2-5 mils performance applications including Assured PNT and mobile SATCOM antenna pointing

9181 Series Inertial Reference Units (IRU) provide navigational grade 2-5 mils performance for platform navigation, system stabilization, and pointing applications. This IRU is based on a proprietary inertial gyroscope technology that reduces size, weight, power, and cost (SWaP-C) when compared to units with similar performance.

GE Aviation's IRUs are utilized on land, maritime, and airborne applications; with over 5,500 units fielded worldwide. This product family is scalable to customer's specific needs.

Standard IRU: compact unit that has 2-5 mils performance, RS-422 interfaces, SAASM or commercial GPS

Enhanced IRU: slightly larger unit that has 2-5 mils performance, expanded interfaces (like Ethernet), SAASM or commercial GPS, faster update rate, and spare processing

Features

- Ability to statically align in 3 to 5 minutes and navigate in GPS-denied environment providing assured Position, Navigation, and Timing (A/PNT)
- GPS-aided dynamic alignment within 1 to 3 minutes
- Embedded military Selective Availability Anti-Spoofing Module (SAASM) GPS or embedded commercial GPS receivers
- Standard data ports include RS-422, RS-232, and 10/100 Ethernet
- Optional interfaces include ARINC 429, MIL-STD-1553, and others upon request
- High-accuracy continuous pitch, roll, true heading (non-magnetic), location, targeting information in any environment
- Future enhancements include M-Code and Global Navigation Satellite System (GNSS) solutions

Technical specifications

	Standard IRU	Enhanced IRU
Performance		
Static alignment heading accuracy (+/- 65° latitude)	2 - 5 mils (0.11° - 0.28°) RMS	2 - 5 mils (0.11° - 0.28°) RMS
Static alignment time	3 to 5 minutes	3 to 5 minutes
Dynamic alignment heading accuracy	2 mils (0.11°) RMS	2 mils (0.11°) RMS
Dynamic alignment time	1 to 3 minutes	1 to 3 minutes
Position accuracy with GPS	7.8 meters CEP	7.8 meters CEP
Position accuracy without GPS	.25-.5% of distance traveled RMS	.25-.5% of distance traveled RMS
Elevation accuracy without GPS	1% (typical <.5%) of distance traveled RMS	1% (typical <.5%) of distance traveled RMS
Pitch and roll accuracy	1 mils (0.06°) RMS	1 mils (0.06°) RMS
Qualifications		
Environmentals	MIL-STD-810	MIL-STD-810
EMI	MIL-STD-461	MIL-STD-461
MTBF MIL-STD-1275 (hours)	13,200 - 16,100	12,500 - 15,000
Operating temperature	-40° C to 60° C	-40° C to 60° C
Power		
Supply voltage / MIL-STD-1275	18VDC to 32VDC	16VDC to 32VDC
Nominal power consumption	16W - 18W	18W - 21W
Connectivity		
Update rate	61 Hz	244 Hz

	Model Specifics							
	Standard IRU				Enhanced IRU			
Model	9181C	9181E	9181G	9181J	9181D	9181F	9181H	9181K
Embedded GPS	N/A (DAGR compatible)	Mil/SAASM (MPE-S)	Commercial (Polaris Link)		N/A (DAGR compatible)	Mil/SAASM (MPE-S)	Commercial (Polaris Link)	
Size W x D x H (in.)	7.5 x 7.5 x 4.75	7.5 x 7.5 x 6.0			7.5 x 7.5 x 5.36	7.5 x 7.5 x 6.0		
Weight (lbs.)	7.5	8.5			8.5	9.0		
Export classification*	CCL 7A003.d.1 or 7A003.c.1	USML 12.d.2.2	USML 12.d.2.1	CCL 7A003.d.1 or 7A003.c.1	CCL 7A003.d.1 or 7A003.c.1	USML 12.d.2.2	USML 12.d.2.1	CCL 7A003.d.1 or 7A003.c.1
Standard I/O	(4) RS-422 Channels				(4) RS-422 Channels, (1) RS-232 Channel, (1) 10/100 Ethernet			
Optional I/O	N/A				(1) ARINC 429, NMEA Protocol (RS-422), VICTORY Protocol (Ethernet)			
Operating modes	Land	Land, Airborne			Land, Seaborne, Airborne			

*Varies - contact GE Aviation to confirm Export Classification for each individual part number

Imagination at work

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