

STIM PRODUCTS

Inertial Measurement Units



Low SWaP Inertial Measurement Systems

Safran's packaged Gyros and IMUs are ITAR free, COTS products for use in wide variety of Military applications. These are mature products with 15 years of volume production => TRL 9. Our products were developed based on customers requiring long life expectancy and reliable performance (~20-30 years). We comply with these MIL STD's to name a few:

- 810G / 502.5-1 and 2
- MIL-STD-810G
- MIL-STD-810E
- MIL-STD-461G RE102
- MIL-STD-461G CS114
- MIL-STD-461G RS103

We fit well into Military GIMBALS & CAMERA SYSTEMS, Guided Munition, Missiles and Seekers, Space and Directional Infrared Counter Measures (DIRCM).

Note: STIM300/MMU9000, STIM318/MMU1000 and STIM210 are used by various manufacturers of DIRCM for accurate pointing since 2015.

GNSS Denied Navigation

Note: Both STIM300 and STIM318 IMUs are used in various GPS/INS systems offered by world leading manufacturers of such systems.

We have been recognized by NASA in State-of-the-Art Small Spacecraft Technology and approved in NASA's user handbook plus recently featured in NASA/ Jacob's Surface Gravimetry Using Rover Navigation Systems white paper.

Contact us for details and selection guidance.

Safran Federal Systems is the trusted Resilient PNT mission partner to U.S. government and defense organizations, from the lab to the field.

FEDERAL SYSTEMS



Specifications

General	STIM320	STIM318	STIM300	STIM210	STIM202
Type	Inertial Measurement Unit	Inertial Measurement Unit	Inertial Measurement Unit	1, 2, or 3-axis gyro module	1, 2, or 3-axis gyro module
Internal shock absorbers	No	No	No	No	No
AUX input with 24 bit ADC	No	No	Yes	No	No
Continuous self-test	Yes	Yes	Yes	Yes	Yes
Dimensions (mm)	44.8 x 38.6 x 21.5	44.8 x 38.6 x 21.5	44.8 x 38.6 x 21.5	44.8 x 38.6 x 21.5	44.8 x 38.6 x 20.0
Weight	57 g	57 g	55 g	52 g	55 g
Operating temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Supply voltage	5 V	5 V	5 V	5 V	5 V
Power consumption	< 2.5 W	< 2.5 W	< 2 W	< 1.5 W	< 1.5 W
Time to valid data	< 7 s	< 1 s	< 1 s	< 1 s	< 6 s
Sample rate (max)	2000 Hz	2000 Hz	2000 Hz	2000 Hz	1000 Hz
Mechanical shock (max)	1500 g	1500 g	1500 g	1500 g	1500 g
Interface Protocol	RS422	RS422	RS422	RS422	RS422
Interface transmission bit rate (max)	5.18 Mbits/s	5.18 Mbits/s	5.18 Mbits/s	3.75 Mbits/s	921.6 kbits/s

Gyro	STIM320	STIM318	STIM300	STIM210	STIM202
Input range	±400°/s	±400°/s ¹⁾	±400°/s ¹⁾	±400°/s	±400°/s
Non-linearity	15 ppm ²⁾	15 ppm ²⁾	15 ppm ²⁾	15 ppm ²⁾	25 ppm ⁷⁾
Resolution	0.22°/h	0.22°/h	0.22°/h	0.22°/h	0.22°/h
Bias instability	0.4°/h	0.3°/h	0.3°/h	0.3°/h	0.4°/h
Angular random walk	0.10 °/√h	0.15 °/√h	0.15 °/√h	0.15 °/√h	0.17 °/√h
Bias error over temperature gradients	±10 °/h (rms) ³⁾	±10 °/h (rms) ³⁾	±10 °/h (rms) ³⁾	±10 °/h (rms) ³⁾	±10 °/h (rms) ³⁾
Bandwidth (-3 dB)	262 Hz	262 Hz	262 Hz	262 Hz	262 Hz
Group delay	2.2 ms ⁴⁾	2.2 ms ⁴⁾	2.2 ms ⁴⁾	2.2 ms ⁴⁾	2.2 ms ⁴⁾
Scale factor accuracy	±500 ppm	±500 ppm	±500 ppm	±500 ppm	±2000 ppm
Misalignment	1 mrad	1 mrad	1 mrad	1 mrad ⁵⁾	1 mrad ⁵⁾
Linear acceleration effect					
Bias (no g-compensation)	7°/h/g	7°/h/g	7°/h/g	7°/h/g	7°/h/g
Bias (with g-compensation)	1°/h/g	1°/h/g	1°/h/g	N/A	N/A
Scale factor (no g-compensation)	400 ppm/g	400 ppm/g	400 ppm/g	400 ppm/g	400 ppm/g
Scale factor (with g-compensation)	50 ppm/g	50 ppm/g	50 ppm/g	N/A	N/A



Specifications

Accelerometer	STIM320	STIM318	STIM300	STIM210	STIM202
Input range	±10g	±10g ⁶⁾	±10g ⁶⁾	N/A	
Resolution	1.9 µg	1.9 µg	1.9 µg		
Bias instability	0.003 mg	0.003 mg	0.04 mg		
Velocity random walk	0.015 m/s/√h	0.015 m/s/√h	0.07 m/s/√h		
Bias error over temperature gradients	±0.7 mg (rms) ³⁾	±0.7 mg (rms) ³⁾	±2 mg (rms) ³⁾		
Scale factor accuracy	±200 ppm	±200 ppm	±200 ppm		
Misalignment	1 mrad	1 mrad	1 mrad		

Inclinometer	STIM320	STIM318	STIM300	STIM210	STIM202
Input range	N/A	±1.7g	±1.7g	N/A	
Resolution		0.2 µg	0.2 µg		
Scale factor accuracy		±500 ppm	±500 ppm		
Misalignment		1 mrad	1 mrad		

1) Optional ranges are available

2) Condition: ±200 °/s

3) Condition: ΔT ≤ 1 °C/min

4) LP filter set to 262 Hz

5) Three-axis configuration

6) Optional ranges: ±5 g, ±10 g, ±30 g, ±80 g

7) Condition: ±250 °/s



Specifications

General	STIM380H	STIM377H	STIM277H
Type	Inertial Measurement Unit	Inertial Measurement Unit	1, 2, or 3-axis gyro module
AUX input with 24 bit ADC	No	Yes	No
Continuous self-test	Yes	Yes	Yes
Dimensions (mm)	44.8 x 38.6 x 21.5	44.8 x 38.6 x 21.5	44.8 x 38.6 x 21.5
Weight	57 g	55 g	52 g
Operating temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Supply voltage	5 V	5 V	5 V
Power consumption	< 2.5 W	< 2 W	< 1.5 W
Time to valid data	< 7 s	< 1 s	< 1 s
Sample rate (max)	2000 Hz	2000 Hz	2000 Hz
Mechanical shock (max)	1500 g	1500 g	1500 g
Interface Protocol	RS422	RS422	RS422
Interface transmission bit rate (max)	5.18 Mbits/s	5.18 Mbits/s	3.75 Mbits/s

Gyro	STIM380	STIM377H	STIM277H
Input range	±400°/s	±400°/s	±400°/s
Non-linearity	15 ppm ¹⁾	15 ppm ¹⁾	15 ppm ¹⁾
Resolution	0.22°/h	0.22°/h	0.22°/h
Bias instability	0.4°/h	0.3°/h	0.3°/h
Angular random walk	0.10 °/√h	0.15 °/√h	0.15 °/√h
Bias error over temperature gradients	±10 °/h (rms) ²⁾	±10 °/h (rms) ²⁾	±10 °/h (rms) ²⁾
Bandwidth (-3 dB)	262 Hz	262 Hz	262 Hz
Group delay	2.2 ms ³⁾	2.2 ms ³⁾	2.2 ms ³⁾
Scale factor accuracy	±500 ppm	±500 ppm	±500 ppm
Misalignment	1 mrad	1 mrad	1 mrad ⁴⁾
Linear acceleration effect			
Bias (no g-compensation)	7 °/h/g	7 °/h/g	7 °/h/g
Bias (with g-compensation)	1 °/h/g	1 °/h/g	N/A
Scale factor (no g-compensation)	400 ppm/g	400 ppm/g	400 ppm/g
Scale factor (with g-compensation)	50 ppm/g	50 ppm/g	N/A



Specifications

Accelerometer	STIM380H	STIM377H	STIM277H
Input range	±10 g	±10 g ⁵⁾	N/A
Resolution	1.9 µg	1.9 µg	
Bias instability	0.003 mg	0.04 mg	
Velocity random walk	0.015 m/s/√h	0.07 m/s/√h	
Bias error over temperature gradients	±0.7 mg (rms) ²⁾	±2 mg (rms) ²⁾	
Scale factor accuracy	±200 ppm	±200 ppm	
Misalignment	1 mrad	1 mrad	

Inclinometer	STIM380H	STIM377H	STIM277H
Input range	N/A	±1.7 g	N/A
Resolution		0.2 µg	
Scale factor accuracy		±500 ppm	
Misalignment		1 mrad	

- 1) Condition: ±200 °/s
- 2) Condition: ΔT ≤ 1 °C/min
- 3) LP filter set to 262 Hz
- 4) Three-axis configuration
- 5) Optional ranges: ±5 g, ±30 g

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