

STIM300

- Small size, low weight and low cost
- ITAR free
- Insensitive to magnetic fields
- 0.3 °/h gyro bias instability
- 0.15 °/√h angular random walk
- ±400 °/s angular rate input range
- 10 °/h gyro bias error over temperature gradients
- 0.04 mg accelerometer bias instability
- ±10 g acceleration input range (optional ranges available)
- 3 inclinometers for accurate levelling
- Auxiliary input



(39 mm x 45 mm x 22 mm)

STIM300 is a high performance and rugged Inertial Measurement Unit (IMU) comprised of 3 highly accurate MEMS gyros, 3 high stability accelerometers and 3 inclinometers. The IMU is factory calibrated and compensated for temperature effects over the full temperature operating range.

The STIM300 is based upon Sensor's proven gyro sensor technology in production for more than two decades. It performs exceptionally well across many applications due to its very low vibration and shock sensitivity. The IMU is qualified according to high-performance aircraft vibration standard.

Range and features

STIM300 full-scale angular rate input range is ±400 °/s and the output is capped at ±480 °/s. Standard acceleration input range is ±10 g. Axis misalignment of as little as 1 mrad is achieved by electronic axis alignment. STIM300 requires a single 5 V power supply and has a digital serial RS422 interface.

STIM300 offers several user selectable output formats and sample rates for gyro and accelerometer data:

- Angular Rate
- Incremental Angle
- Average Angular Rate
- Integrated Angle
- Acceleration
- Integrated Velocity
- Incremental Velocity
- Average Acceleration

Device configurations and self-diagnostics

A reliable RISC ARM microcontroller enables easy device configuration and programming. The user can set output unit format, sample frequency and datagram content, LP filter cut-off frequency, RS422 transmission bit rate and line termination.

STIM300 is continuously monitoring its internal status and track more than 100 parameters that the user can access. This includes monitoring of:

- Internal references
- Sensors for error and overload
- Internal temperatures
- RAM and flash
- Supply voltage

Evaluation tools

STIM300 evaluation tools supporting PCI or USB connectivity are available. The evaluation tools offer easy access to measurement data and configuration of the IMU. It supports data sampling at alternative rates, graphical presentation, and data logging to file. The evaluation tools contain a RS422 interface for USB or PCI hardware setup, all necessary cabling, and PC software.

Application areas

The STIM300 IMU is well suited for stabilization, guidance and navigation applications in Industrial, Aerospace and Defence markets. The design is field proven in Military Land Navigators, Missile systems, Target acquisition systems, Airborne surveillance, DIRCM, Remote Weapon Systems, Launch vehicles and Satellites.

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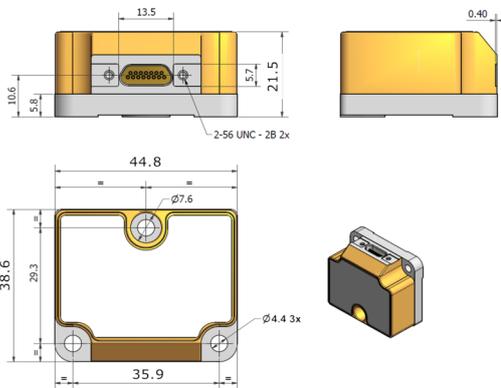
STIM300 Inertia Measurement Unit

Parameter	Min	Nom	Max	Unit
GENERAL				
Weight		55		g
Operating temperature	-40		85	°C
Supply voltage	4.5	5.0	5.5	V
Power consumption		1.5	2	W
Time to valid data		0.7	1	s
Sample rate			2000	SPS
Mechanical shock, any direction			1500	g
RS422 transmission bit rate			5.18	Mbit/s
Misalignment		1		mrad
GYRO				
Input range		±400 ¹⁾		°/s
Non-linearity (condition: ±200 °/s)		15		ppm
Resolution		0.22		°/h
Bias instability		0.3		°/h
Angular random walk		0.15		°/√h
Bias error over temperature gradients		±10 ²⁾		°/h rms
Linear acceleration effect				
Bias (no g-compensation)		7		°/h/g
Bias (with g-compensation)		1		°/h/g
Scale factor (no g-compensation)		400		ppm/g
Scale factor (with g-compensation)		50		ppm/g
Scale factor accuracy		±500		ppm
ACCELEROMETER				
Input range		±10 ³⁾		g
Resolution		1.9		μg
Bias instability		0.04		mg
Velocity random walk		0.07		m/s/√h
Bias error over temperature gradients		±2 ²⁾		mg rms
Scale factor accuracy		±200		ppm
INCLINOMETER				
Input range		±1.7		g
Resolution		0.2		μg
Scale factor accuracy		±500		ppm

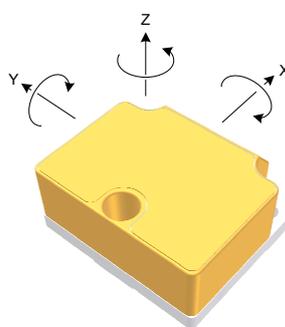
1) Optional ranges are available 2) Condition: ΔT ≤ 1°C/min 3) Optional ranges: ±5 g, ±30 g and ±80 g

MECHANICAL DIMENSIONS

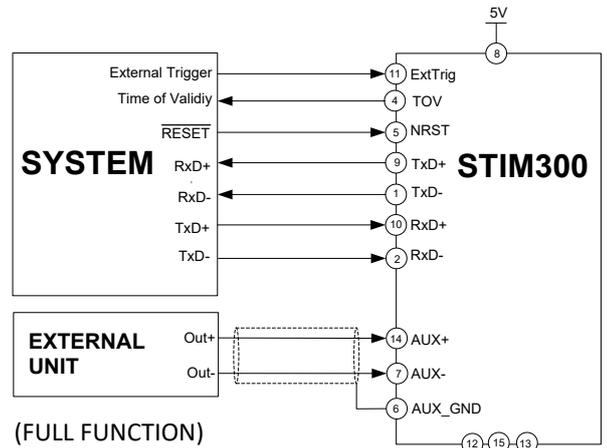
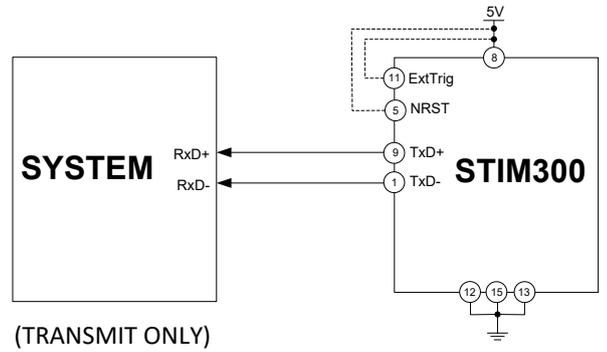
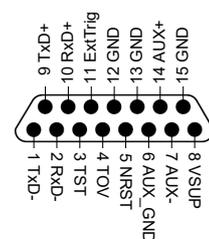
All dimensions in mm. Volume < 2,0 cu. in (33 cm³)



AXIS DEFINITIONS



PINOUT



FUNCTIONAL BLOCK DIAGRAM

