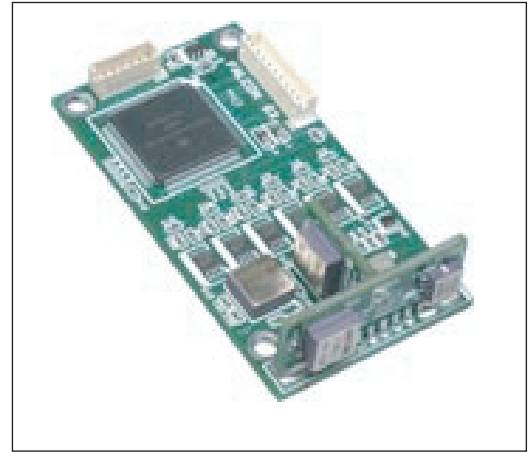


FALCON^{GX}

Triaxial MEMS IMU Module

STANDARD FEATURES

- **High Performance MEMS Inertial Sensors**
- **Compensated bias and scale factor**
- **RS-232 Serial Interface**
- **On-Board Temperature Monitor**
- **Low Cost**
- **Ultra Compact Package**
- **Low Power Consumption (Single 5V Supply)**



PRODUCT DESCRIPTION

The Falcon/GX is a complete three axis silicon MEMS inertial measurement module with serial output. The Falcon/GX integrates a high performance 32bit RISC CPU with three MEMS angular rate gyros and three MEMS accelerometers in a triaxial orthogonal configuration. Featuring fully compensated bias and scale factor, these rugged inertial sensor modules are rated for 500g operating and 1000g non-operating shock survival. The module requires a single 5V supply and consumes only 445mW.

Angular rate outputs are available in two ranges of $\pm 150^\circ/s$ or $\pm 300^\circ/s$, with optional gain, output sensitivities can be configured to $\pm 15^\circ/s$ full scale. Acceleration outputs are available in two ranges $\pm 2g$ or $\pm 10g$, with optional gain, output sensitivities to $\pm 0.5g$ full scale are available. Automatic self-test verifies proper sensor operation.

Digital outputs are 10bit (1024 count) with user selectable sampling rates and digital half-band filtering for angular rate and acceleration in addition to fifth-order analog low-pass filters. Temperature output is also provided. Outputs are terminated on a detent-locking header for reliable contact in dynamic environments. The wire-to-board connection allows mounting the module in any orientation. Preassembled cable sets are available for easy system integration.

An evaluation kit is available with everything needed to power and test a Falcon/GX on a desktop or in your application. The evaluation kit includes a Falcon/GX, connecting cables, AC power supply and a user manual. An optional aluminum enclosure is available for installations in harsh environments.

APPLICATIONS

- Platform Stabilization
- Motion Control Systems
- Inertial Guidance & Navigation
- Vehicle Stabilization & Control
- Antenna Tracking
- Attitude Reference Systems
- Seismic Event Sensing
- Motion Instrumentation
- Virtual Reality Input Sensing
- Vehicle Failsafe Systems

ORDERING INFORMATION

FALCON/GX ONI-23505- □□□ - □□ - □□

$\pm 150^\circ/s$
 $\pm 300^\circ/s$
2g
10g
40Hz
80Hz

Standard stock configuration is $\pm 150^\circ/s$ (40Hz) angular rate & $\pm 2g$ (60Hz) acceleration. Custom bandwidth and mixed sensitivities/bandwidths are available.

CUSTOM CONFIGURATIONS

- Custom I/O Header (Removed or Reversed)
- Custom Bandwidth 40-100Hz
- Custom Rate Gain ± 300 to $\pm 15^\circ/s$
- Standard cable / connector sets
- Aluminum Enclosures

DISCLAIMER

Data contained herein is believed to be reliable and accurate. O-Navi LLC assumes no liability for the use of any information contained herein, nor for any infringements of patents or other rights of third parties that may result from its use. No license is granted for any patent rights of O-Navi LLC.

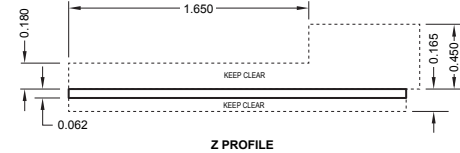
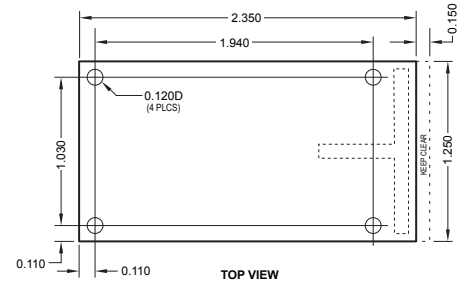
SPECIFICATIONS

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS / REMARKS
ANGULAR RATE					
Dynamic Range		±150		°/s	Full Scale (F.S.) Range
Sensitivity	11.25	12.5	13.75	mV/°/s	@25°C
Sensitivity (Over Temp)	11.25		13.75	mV/°/s	4.75V<VCC<5.25V
Voltage Sensitivity (Scale)		0.7		%/V	4.75V<VCC<5.25V
Non-Linearity		0.10		% F.S.	Best Fit Straight Line
Noise Density		0.05		°/s/√Hz	@25°C
Bias		2.5		V	
Bias Temp Drift			±300	mV	
Voltage Sensitivity (Bias)		1		°/s/V	4.75V<VCC<5.25V
Bandwidth		40		Hz	-3db
Self Resonant Freq		14		KHz	
Linear Acceleration Effect		0.2		°/s/g	Any Axis
Start-up Time		35		mS	To within ±0.5°/s of final
ACCELERATION					
Dynamic Range	±2			g	Full Scale (F.S.) Range
Sensitivity	800	1000	1200	mV/g	@25°C
Sensitivity Drift over Temp		±0.5		%	Delta from 25°C
Non-Linearity		0.2		% F.S.	Best Fit Straight Line
Noise Density		200	1000	μg√Hz	@25°C
Bias	2.0	2.5	3.0	V	Bias = 1/2VCC ±0.5V
Offset Drift		2.0		mg/°C	
Sensor Die Align Error		1		°	
Cross Axis Sensitivity		±2		%	
Bandwidth		50		Hz	-3db
Resonant Freq (Sensor)		10	4.0	kHz	
Supply Voltage Sensitivity		1.0		% / V	
Self-Test Deviation		10		%	
Start-up Time		<20		mS	BW: 50Hz
TEMP SENSOR					
Temperature Output		2.5		V	@25°C
Temperature Scale		8.4		mV/°C	
Temp. Output Drive			50	μA	
ELECTRICAL					
Supply Voltage	4.75	5.00	5.25	V	
Supply Current		89		mA	Vcc=5V
Power		445		mW	Vcc=5V
PHYSICAL					
Temp Range (OP)	-40		+85	°C	Absol Max: -55 to +125°C
Temp Range (NOP)	-65		+125	°C	
Shock (OP)			500	g	Any Axis 0.5mS
Shock (NOP)			1000	g	Any Axis 0.5mS
Humidity	0		90	% R.H.	Non-Condensing
Mass		11.5		gram	
Dimensions:	63.50 X 31.75 X 15.62MM				
Mounting Hole:	Diameter 3.175mm (M3 or SAE 4-40)				
Interface Connector:	JST - B6B-ZR				
Mating Connector:	JST - ZHR-6				

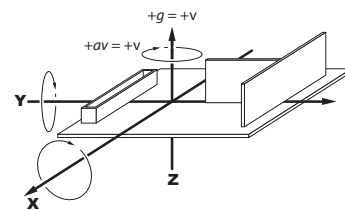
OPTIONS

I/O Cable (Flying Leads)	305-0606A
I/O Cable (Power Connector)	305-0635A
AC Power Supply (US Plug)	310-0502A
Stand-Off Kit (1/2" X 4-40) [w/Screws]	810-7440

DIMENSIONS



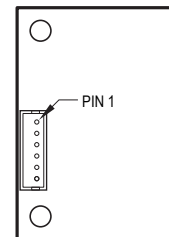
AXIAL SENSITIVITY



CONNECTOR PINS

PIN OUT

- 1 - +5V
- 2 - SDI
- 3 - SDO
- 4 - N/C
- 5 - GND
- 6 - GND



SPECIFICATION SUBJECT TO CHANGE WITHOUT NOTICE