



## FMU-500

### FIBER OPTIC MEASUREMENT UNIT

The Inertial Measurement Unit "FMU-500" is a general-purpose sensing unit, providing digital measurement data of angular rates and linear accelerations relative to three orthogonal body fixed axes.

The FMU is based on a 3-axis Fiber Optic Gyro configuration. The accelerometers are selectable as closed loop silicon micro-pendulum sensors or quartz VBA sensors. This IMU has been specifically designed for civil & industrial applications which need **high reliability, excellent signal stability, and very low noise.**

#### KEY FEATURES AND BENEFITS

Civilian product export classification/ITAR free

Unlimited bandwidth, white noise = well suited for high speed, high performance stabilization

Adjustable form factor = simple to integrate into customer architecture = ideally suited for stabilization of geo-referenced systems

Closed-loop stable and low-noise FOG gyroscope characteristics

Magnetic shielding, advanced mechanical design for sensor de-coupling

Available in 3 configurations; "open-frame", "light-packaging" and "hermetic packaging"

#### PERFORMANCE SPECIFICATIONS

Measurement range :	$\geq 300 \text{ }^\circ/\text{s}$
Bias (over the temperature range) :	$0.07 \text{ }^\circ/\text{h}$ (typ.) $\leq 0.5 \text{ }^\circ/\text{h}$ (max)
In-run stability :	$0.05 \text{ }^\circ/\text{h}$ (typ.) $\leq 0.1 \text{ }^\circ/\text{h}$ (max)
Scale-factor accuracy (over temp range) :	50 ppm (typ.)
Scale-factor non linearity :	< 100 ppm
Noise:	$< 0.85^\circ/\text{h}/\sqrt{\text{Hz}}$
Angle random walk :	$0.009^\circ/\sqrt{\text{hour}}$ (typ.)
Bandwidth :	up to 1000 Hz
RS-422 synchronous	
Baud rate :	2 Mbit/s
Data rate :	200 Hz (nominal), $\geq 2000 \text{ Hz}$ (max)

### Featured Applications

Helicopter Autopilots  
Hybrid Navigation & Geo-Localization  
High-Performance Stabilization  
Attitude & Heading Reference Systems  
Automatic Flight Control Systems

Redundant IMU for HRG, RLG, or MEMS Gyro based  
Unmanned Navigation Systems  
Pipeline, Geodesy & Aerial Surveys  
Industrial  
Robotics

# DATASHEET FOR FMU-500

## ELECTRICAL / MECHANICAL

Initialization Time (valid data)	≤ 100 ms (first transmission of data)
Data Interface Synchronous	TYPE RS-422
Baud Rate	2 Mbit/s
Data Rate	200 Hz (nominal), ≥ 2000 Hz (max)
Dimensions (max)	93 x 93 x 114 mm (w/o connector)
Weight (unpackaged)	≤ 1400 g
Power Consumption	8 - 12 W (typical), 19 W (max)
Input Voltage	±15 VDC, +5 VDC

## ENVIRONMENT

Temperature (operating, performance)	-45°C to +85°C / -40°C to +71°C (Ground survival is -55°C to +85°C)
Shock (operating)	6 g, 11ms
Vibration (operating / survival)	10 ... 2000 Hz, 1 grms random 20... 2000 Hz, 6.3 grms random

## ACCELEROMETERS (Quarz VBA)

Input Limit (max)	± 13g ± 10%
Bias Instability (const. Temp)	0.003 mg ( <i>typ.</i> )
Scale Factor Temperature Sensitivity	≤ 200 ppm rms
VRW (25°C)	0.9 $\mu\text{m/s}/\sqrt{\text{Hz}}$
Bandwidth (-3 dB)	≥ 500 Hz

ALL ERRORS ARE DEFINED AS 1 $\sigma$ -VALUES IF NOT STATED OTHERWISE



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