M-G552PR1

EPSON

■ GENERAL DESCRIPTION

The M-G552PR1 is a small form factor inertial measurement unit (IMU) with 6 degrees of freedom: tri-axial angular rates and linear accelerations, and provides high-stability and high-precision measurement capabilities with the use of high-precision compensation technology.

The M-G552PR1 features a built-in attitude angle output function using an extended Kalman filter optimized for high-speed operation and highly accurate attitude angle (Roll/Pitch). This exceptional real time performance is achieved using our unique DSP processing architecture for efficiency, and low power consumption. The application or system level power consumption and complexity can be reduced by offloading the high-speed processing from the host system that would otherwise be necessary to achieve highly dynamic posture angle.

A variety of calibration parameters are stored in memory of the IMU, and are automatically reflected in the measurement data being sent to the application after the power of the IMU is turned on.

With RS422 interface support for host communication, the M-G552PR1 reduces technical barriers for users to introduce inertial measurement and minimizes design resources to implement inertial movement analysis and control applications.
This unit is packaged in a water-proof and dust-proof metallic case. It is suitable for use in industrial and heavy duty applications.

The features of the IMU such as high stability, high precision, and small size make it easy to create and differentiate applications in various fields of industrial systems.

■ FEATURES

Item		Specification
Sensor		
	Integrated sensor	SEIKO EPSON inertial measurement sensor
		Low-noise, High-stability
		Gyro bias instability : 1.2 °/h
		Angular random walk : 0.08 °/√h
		Initial bias error : 360 °/h (1σ) / 4 mG(1σ)
		6 Degree of freedom
		Triple Gyroscope : ±450 °/s
		Tri-axis Accelerometer : ±10 G
		Tilt function
		Inclination mode : ±80 °
		Euler mode: ±180 °(Pitch), ±45 °(Roll)
		Resolution: 0.01 °, Static :±0.2 °(1σ), Dynamic :±0.2 °(1σ)
		16bit / 32bit data resolution
		Calibrated stability (Bias, Scale factor, Axial alignment)
Interface		
	Protocol (DL layer)	RS-422 (TX/RX Pair, Full-duplex transmission)
	Bit rate	460.8k bps (default) /230.4k bps / 921.6k bps
	Cable length	250m (max)
	Terminator	Included (120Ωtyp)
Environment		
	Voltage supply	9 V to 32 V
	Power consumption	42 mA
	Operating temperature range	-30 °C to +80 °C
External dimension		
	Outer packaging	Overall metallic shield case
	Size	65 x 60 x 30 mm^3 (Not including projection.)
	Weight	115 g
	Interface connector	M12, 8pin-male, waterproof
	Waterproof, Dustproof:	IP67 equivalent

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Item		Specification
	Random vibration	1 hour at 20Grms MIL-STD-810, METHOD 514.x ANNEX E, Category24
	Sine sweep vibration	4 hours / axis at 10G MIL-STD-202G, METHOD 204
	Mechanical shock	1,000G, Half-sine 0.5ms, once per ±each axis(6times)
Regulation		
	EU	CE marking (EN61326/RoHS Directive) Class A
	USA	FCC part15B Class A

■ APPLICATIONS

- Motion and vibration measurement
- Platform stabilization
- Attitude detection for unmanned systems
- Vibration control and stabilization

■ OUTLINE DIMENSION
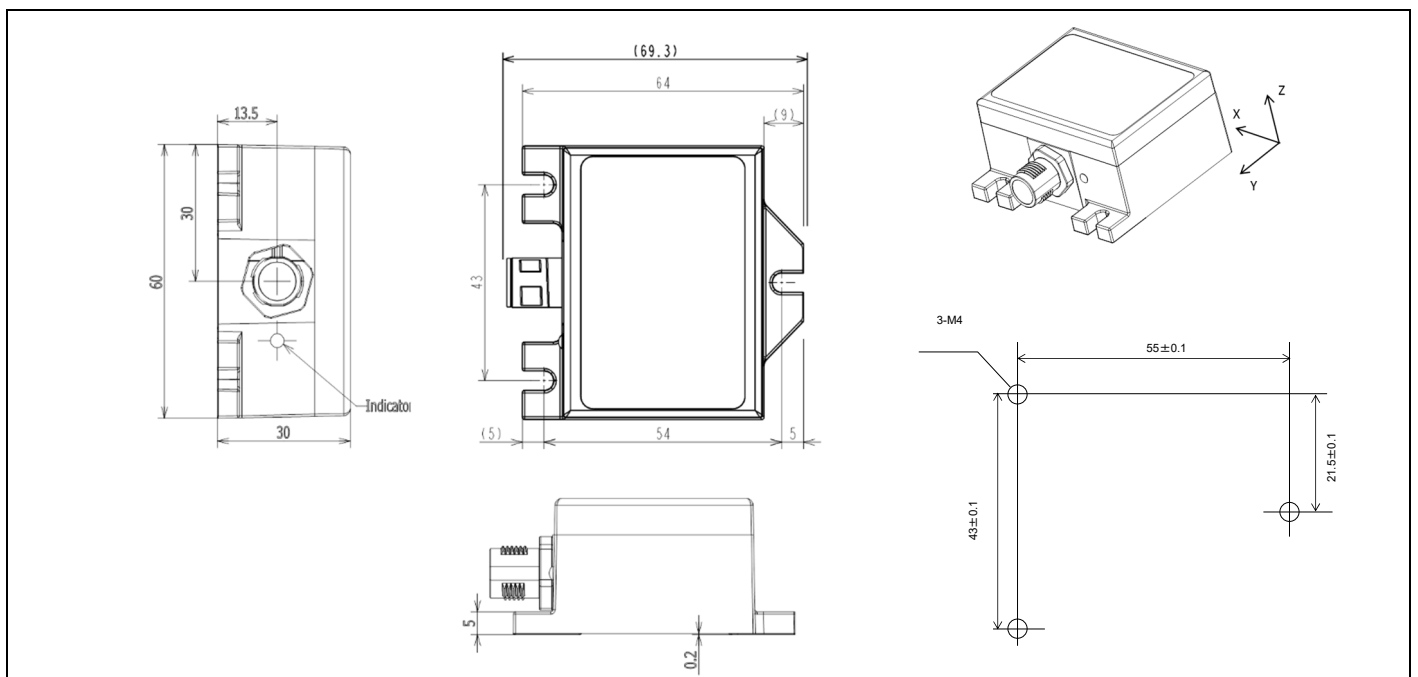
Outline Dimensions (millimeters)

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