

IMU (Inertial Measurement Unit) CAN INTERFACE

■ GENERAL DESCRIPTION

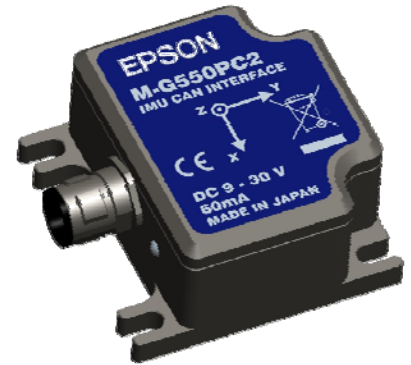
The M-G550PC2 is a small form factor inertial measurement unit (IMU) with 6 degrees of freedom: tri-axial angular rates and linear accelerations, and provides high-stability and high-precision measurement capabilities with the use of high-precision compensation technology.

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 Controller Area Network (CAN) interface support for host communication, the M-G550PC2 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

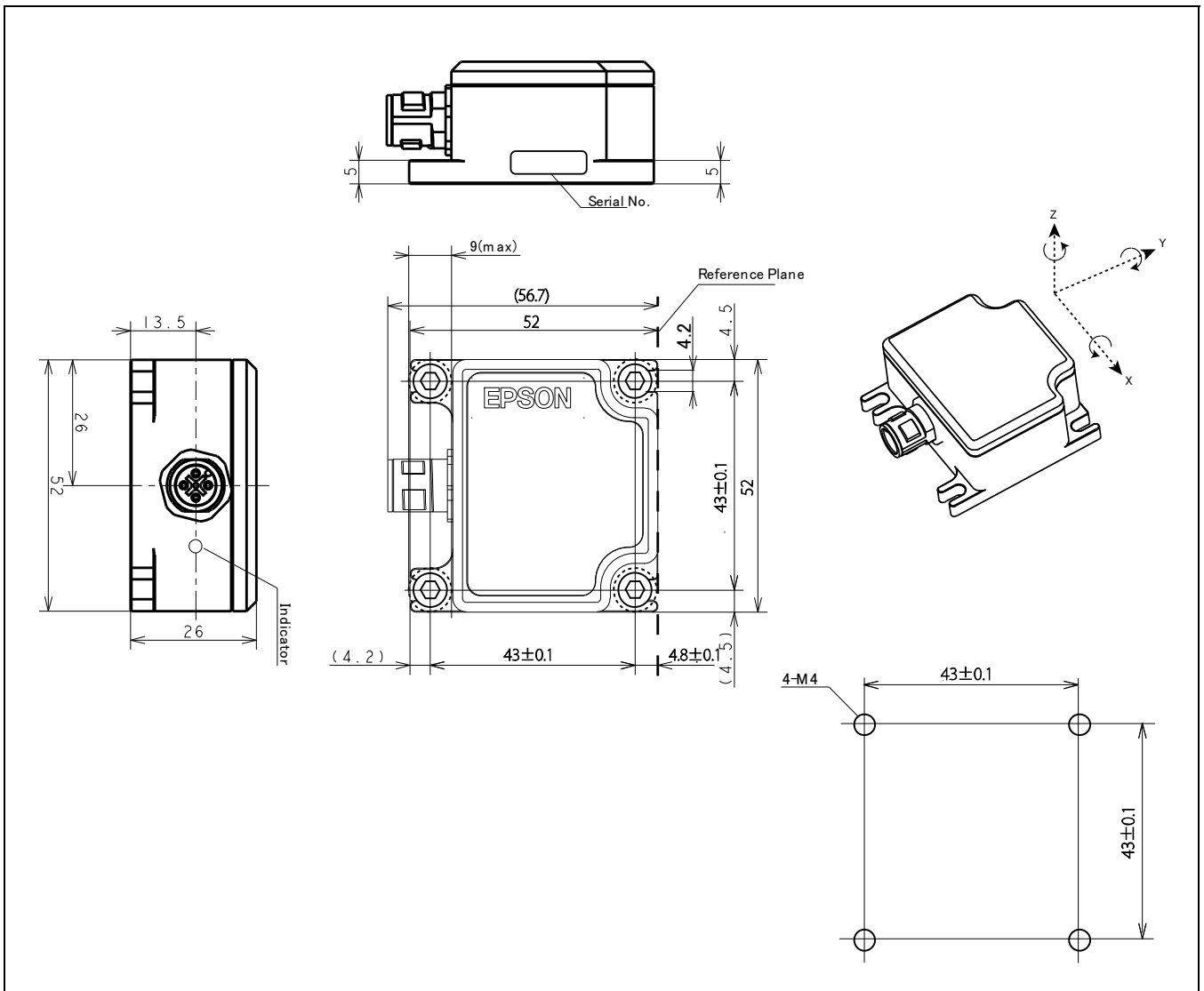
Item	Specification	Note
Sensor		
Integrated sensor	SEIKO EPSON Inertial Measurement Unit (IMU) Low-Noise, High-stability Gyro Bias Instability: 3.5 deg/hr Angular Random Walk : 0.1 deg/√hr Initial Bias Error : ±0.5 deg/s (1σ) 6 Degree Of Freedom Triple Gyroscope : ±150 deg/s Tri-Axis Accelerometer : ±5 G 16bit data resolution Calibrated Stability (Bias, Scale Factor, Axial alignment)	
Sampling rate	1000/ 500/ 250/ 125/ 62.5/ 31.25/ 15.625 sps 400/200/100/80/50/40/25/20 sps	100 sps (Default setting)
Filter	Built-in moving average filter and FIR Kaiser filter	Default: 09h FIR Kaiser tap 32 fc=100Hz
Interface		
Protocol	CANopen	
Physical layer	ISO11898-2 (High speed CAN)	
Frame format	CAN2.0A	
Profile	DS-301	Standard profile
	DS-404	Device profile for measuring devices
Bit rate	1M/ 800k/ 500k/ 250k/ 125k/ 50k/ 20k/ 10k bps	Default: 250kbps
Node-ID	1 to 127	Default: 1
Other function		
Data logging	This unit can log 1,048,560 data samples	Logging Mode feature
Indicator	Run-LED (Green)/ Error-LED (Red)	Accordance with DS-303-3
Terminator	Not included	
General specification		
Voltage supply	9 to 30 V	
Power consumption	26.5mA (Typ. Vin = 12V)	
Operating temperature range	-25 to +70°C	
	-40 to +70°C (without mechanical actuation)	

External dimension		
Outer packaging	Overall metallic shield case	
Size	52 x 52 x 26mm (Not including projection.)	
Weight	81 g	
Interface connector	CAN connector: 5-pos, M12, water-proof	
Water-proof , Dust-proof:	IP67	
Regulation		
EU	CE marking (CE marking (EN61326/RoHS Directive)	
USA	FCC part15B Class A	

■ APPLICATIONS

- Motion and Vibration Measurement
- Platform Stabilization
- Attitude Detection for Unmanned Systems
- Vibration Control and Stabilization

■ OUTLINE DIMENSION



Appendix1. Connector specification

Table 1 Connector specification

Model number	SACC-DSI-MS-5CON-M12-SCO SH
Manufacturer	PHOENIX CONTACT

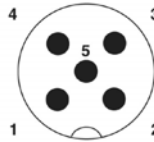


Figure 2 Terminal Layout
Table 2 Terminal Function

No	Pin Name	I/O	Description
1	CAN_SHLD	-	CAN Shield ^(*)
2	CAN_V+	I	external power supply (9-30V)
3	CAN_GND	-	Ground
4	CAN_H	I/O	CAN H bus line
5	CAN_L	I/O	CAN L bus line

Notice: This unit should be connected to a connector that satisfies at least the IP67 water and dust proof specification.

(*) CAN_SHLD is connected to the case.

Appendix2. Product Specifications

A.2.1. Absolute Maximum Ratings

Table 2.1 Absolute Maximum Rating

Parameter	Term	Conditions	Range	Unit
Power supply voltage	V_{IN}	CAN_V+ to CAN_GND	-0.3 ~ +32V	V
Port input voltage	V_{port}	CANH/CANL to CAN_GND	-3 ~ +32	V
Storage temperature	T_{STG}		-40 ~ +85	°C
Operating temperature1	T_{OPR1}		-25 ~ +70	°C
Operating temperature2	T_{OPR2}	without mechanical actuation	-40 ~ +70	°C
Storage humidity	H_{stg}	no condensation	90 or less	% R.H.
Operating humidity	H_{opr}	no condensation	90 or less	% R.H.
Acceleration / Shock		Half-sine 0.5msec	500	G

If the unit is operated beyond the absolute maximum rating, malfunction may occur or the unit may fail completely. Although the unit may appear to operate normally, reliability may decrease.

A.2.2. Recommended operating conditions

Table 2.2 Recommended operating conditions

$T_a=25^{\circ}\text{C}$, $V_{in}=12\text{V}$, $R_L=60\Omega$, unless otherwise specified; all voltages are defined with respect to ground

Parameter	Term	Condition	Min.	Typ	Max.	Unit
Power supply voltage	V_{IN}	CAN_V+ to CAN_GND (*)	9 ^(*)	12 (24)	30	V
Port input voltage	V_{PORT}	CANH/CANL to GND	-2	-	7	V
Operating temperature	T_{OPE}		-25	-	70	°C

(*)1 When power supply voltage is 9V or less, the master may not be able to communicate with a node normally even if the run-LED turns on.

(*)2 The power supply voltage must reach the recommended operating condition within 2 seconds after power is applied to a node.

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