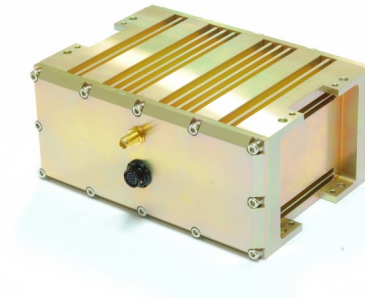


Features

- MEMS INS/GPS Integrated Navigation System
- Fast Start-up and Fully Self-contained
- Low Power Consumption
- Temperature Compensated
- Compact and Rugged Package



Applications

- Vehicle Instrumentation
- Robotics/Avionics
- Guidance and Control Systems
- Platform Stabilization
- Unmanned Aerial Vehicles

Description

The Marion® GA3390R is an INS/GPS integrated navigation system that can be used to measure position, velocity, attitude, angular rate and acceleration under dynamic conditions. It is a highly integrated, compact, light, and fully self-contained navigation system. It encloses three gyroscopes, three accelerometers, three magnetometers, a pressure sensor, and a GPS receiver. The GA3390R calculates stabilized position and attitude by fusing gyroscope, accelerometer, and GPS information. In its basic operation, it provides raw IMU data such as angular rates and accelerations. It can also provide attitude, position and static pressure that can be used to determine altitude. The data update rate of the system is 100Hz. Internally, it implements a Kalman filter that integrates inertial sensor data and GPS information. A temperature compensation technique is used to improve the angular rate accuracy.

Specification

Performance	Input Range	Rate	± 150 °/sec
		Acceleration	$\pm 2G$ ($\pm 10G$ optional)
	Accuracy	Position	5 m CEP (with GPS) ¹⁾
		Velocity	0.5 m/s RMS (with GPS) ¹⁾
		Roll, Pitch	0.5 °, 0.5 °RMS (with GPS)
		Heading	1.0 ° (with GPS) 2.0 ° (w/o GPS) ²⁾
	Gyro Drift		30~100°/hr
Update Rate		<100 Hz	
Physical	Weight		1.2Kg (Including case)
	Size (L, W, H)		145.0 mm X 115.5 mm X 65.0 mm (including connector)
Electrical	Power Consumption		5W (nominal)
	Input Voltage		6 ~ 18 V (12v nominal)
Environmental	Operating Temperature		-40 ~ 85 °C

1) All satellites at -130dB

2) External magnetic field compensated

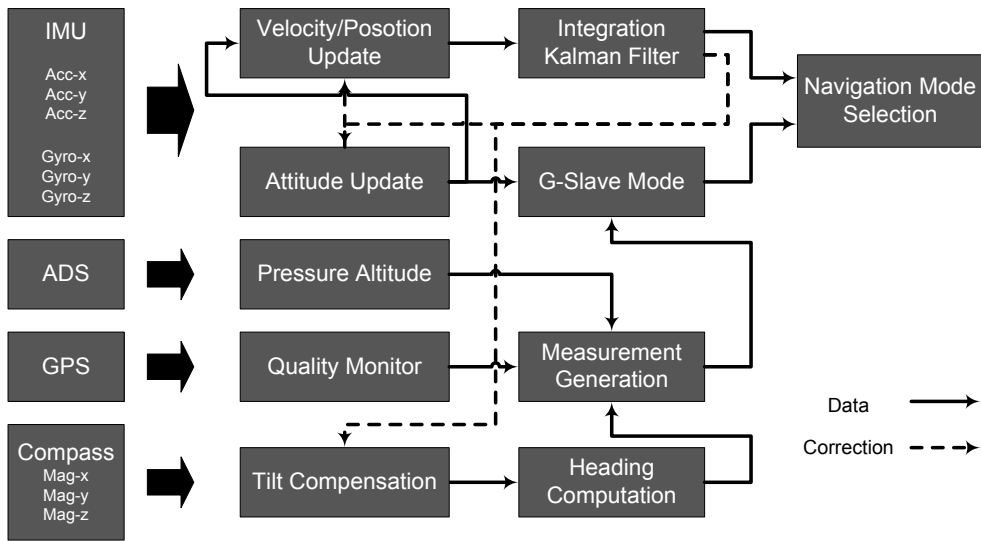


Figure 1. Architecture of Integration Algorithm

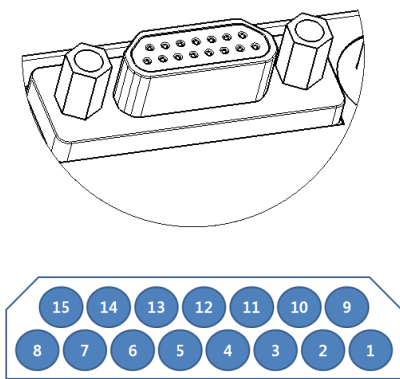


Figure 2. Pin Arrangement

Number	Name	Function
1, 11	GND	Power ground
3, 13	VDD	Main power (10~35VDC)
6	RxD+	RS-422 receive data+ (optional)
7	RxD-	RS-422 receive data - (optional)
9	TxD+	RS-422 transmit data+ (optional)
10	TxD-	RS-422 transmit data- (optional)
14	RxD	RS-232 receive data
15	TxD	RS-232 transmit data
Others	Reserved	Reserved (open)

Table 1. Pin Functions

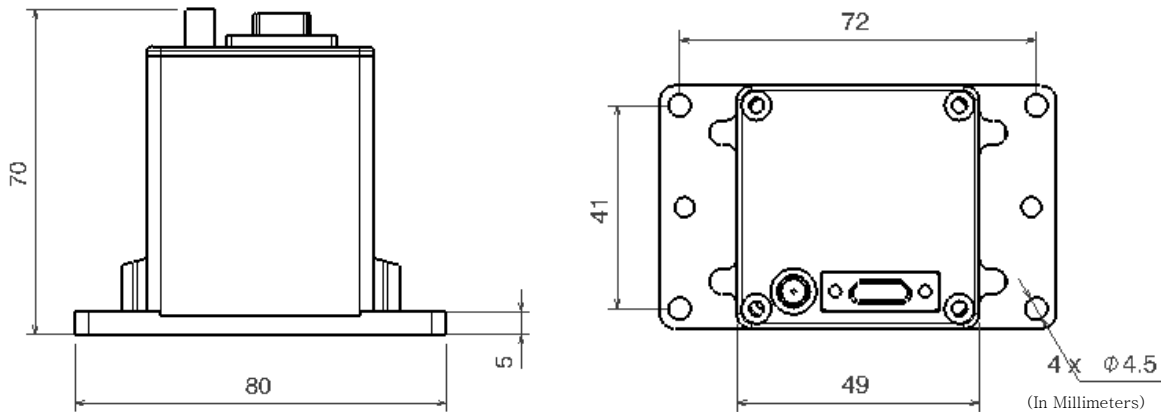


Figure 3. Physical Dimension