New

µNAV™

NAVIGATION & SERVO CONTROL BOARD

- Miniature, Low Cost Robotic Vehicle Sensor Suite
- Onboard R/C Servo Controller
- Standard 51-Pin Connector for Optional Stargate Auto-Pilot Interface
- Pre-installed with Open Source Inertial Firmware
- Sensor Calibration and Servo Control via MICRO-VIEW User Interface

Applications

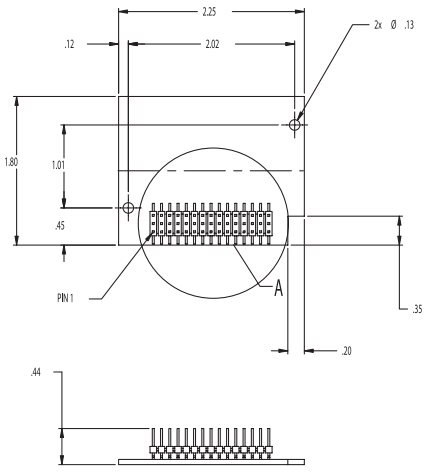
- Radio Control Fixed and Rotary Wing Aircraft
- Robotics Navigation and Control
- Indoor UAV Lab

MNAV100CA

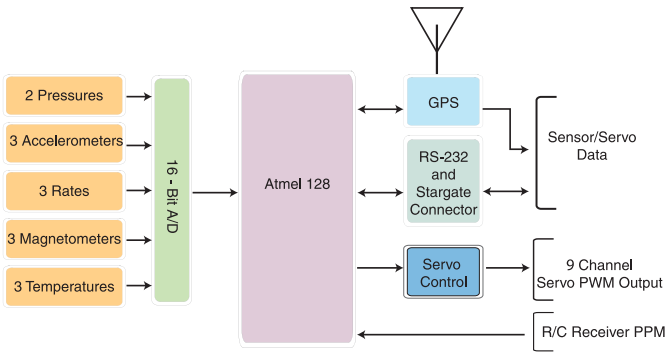
The MNAV100CA is a calibrated digital sensor and servo control system designed for use in Radio Control (R/C) vehicles. The onboard sensor package includes accelerometers, angular rate sensors, and magnetometers for use in inner loop control applications as well as static pressure (altitude) and dynamic pressure (airspeed) sensors for use in airborne robotics. A GPS sensor is also included for both path planning and navigation.

The MNAV100CA's comprehensive onboard servo control solution includes both R/C servo control hardware and an R/C receiver Pulse Position Modulation (PPM) interface. R/C servo hardware provides users with software-based control of up to nine separate servos while the PPM interface enables software interpretation of R/C receiver commands thereby offering users both automated software control as well as manual "takeover" capability.

Output data are provided in a digital (RS-232) format. Each MNAV100CA system comes with a GPS antenna, interface cables and User's Manual. Crossbow's MICRO-VIEW software is also included to assist users with sensor calibration, servo control, data collection and overall system development.
When connected to Crossbow's Stargate Processor Board (SPB400), via the standard 51-pin connector, the MNAV100CA combines with the SPB400 to



Package Dimensions



µNAV™ Block Diagram

inertial systems

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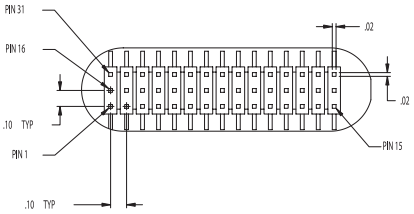
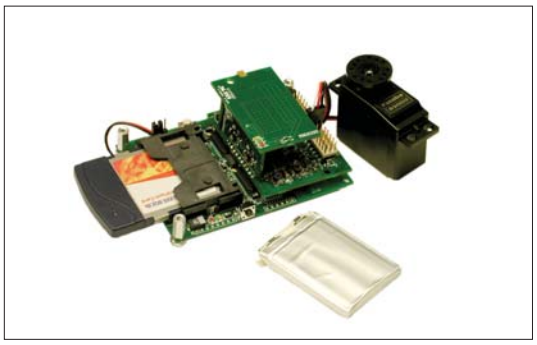
Specifications		MNAV100CA	Remarks
Performance			
Update Rate (Hz)		2-100	User Programmable
Angular Rate Range		± 150	
Acceleration Range X/Y/Z (g)		± 2	
Inertial Sensor Bandwidth (Hz)		> 25	-3 dB point
Magnetometer Range (G)		± 0.75	
Altitude Range (m,MSL)		0-5000	
Airspeed Range (m/s)		0-80	
GPS Accuracy (m)		3	CEP
Environment			
Operating Temperature (°C)		-5 to +45	
Electrical			
Input Voltage (VDC)		3.7 to 16	
Power Consumption (W)		< 0.8	at 5 VDC
Digital Output Format		RS-232	
Physical			
Size	(in)	2.25 x 1.80 x 0.44	
	(cm)	5.70 x 4.50 x 1.10	
Weight	(g)	33	
Connector		15X3 Array of 0.1 inch square pins	

Notes: Specifications subject to change without notice

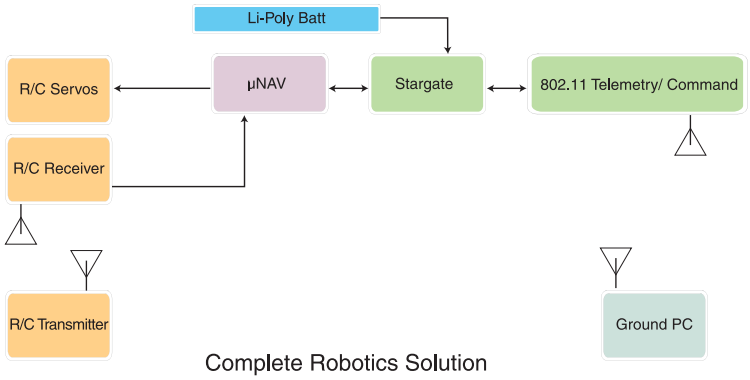


Pin	Function
1-15,31	Ground
16,32	Input Power
17,20-30	Servo Power
18	RS-232 Receive Port 0
33	RS-232 Transmit Port 0
19	RS-232 Receive Port 1 (GPS)
34	RS-232 Transmit Port 1 (GPS)
35	PPM Input
36	High Speed Servo PWM
37	Servo 8 PWM
38	Servo 7 PWM
39	Servo 6 PWM
40	Servo 5 PWM
41	Servo 4 PWM
42	Servo 3 PWM
43	Servo 2 PWM
44	Servo 1 PWM
45	Servo 0 PWM

form a sophisticated open-source robotics platform. This comprehensive robotics solution offers users a flexible development platform for state estimation, WiFi telemetry command uplink/downlink and closed-loop navigation and control. Payload sensors (e.g. USB image sensor) can also be connected and processed by the Stargate to support intelligent robotics applications.



µNAV™ integrated with Complete Robotics Hardware



Complete Robotics Solution

Ordering Information

Model	Description	Gyro (°/sec)	Accel (g)
MNAV100CA	Navigation and Servo Control Board	± 150	± 2

CALL FACTORY FOR OTHER CONFIGURATIONS

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