



123.5m

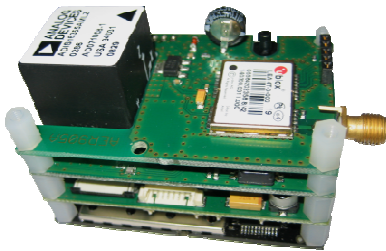
300.5m



502m

TITAN CRONUS

UAV Auto Pilot



The **AeroSpy** OEM flight controller *Titan Cronus* combines latest MEMS sensor technology and integrated GPS through a full state Kalman Filter to a high performance Air Data, Attitude, Heading, Position Reference System (ADAHPRS). Adding a second open source 60 MIPS navigation controller, the *Titan Cronus* becomes a worldwide unique platform for your UAV development.

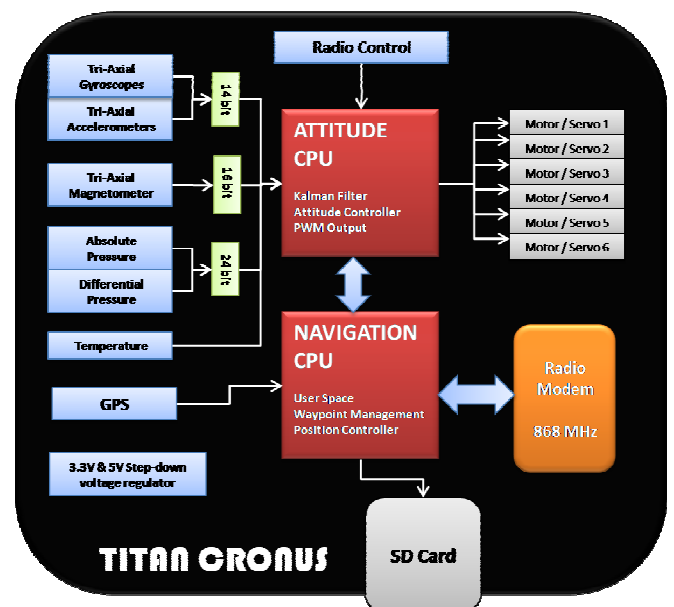
Key Features

- High Update Rate (500 Hz)
- 12 State Kalman Filter
- 2 x 60 MIPS 32 bit Controllers with 512 kB Flash each
- 4 Serial Interfaces (SPI, I²C, UART, CAN) and JTAG
- 6 Pulse Width Modulation (PWM) Output Channels with 32-bit Resolution up to 500 Hz
- 10 Input Analog to Digital Converters (ADC) 10/16 bit
- On Board Step Down Voltage Regulators for 3.3V and 5V
- Easy to use **AeroSpy** Ground Station with
 - Real-Time Telemetry
 - In-Flight Waypoint Management
 - In-Flight Parameter Tuning
 - Moving Map (2D/3D)
 - Integrated Live Video Downlink

Highlights

- Program your application on the navigation CPU and/or use the **AeroSpy** standard flight controller library and the underlying preprogrammed attitude CPU to control your UAV
- Ready to go C-based open source code framework for your application on the navigation CPU with JTAG
- **AeroSpy** ground station to configure and fine-tune your UAV in-flight
- Use the advantage of a precision-aligned across axis, temperature compensated and precision-calibrated MEMS IMU with 14 bit resolution
- Auto-calibrating electronic gimbaled 16 bit compass
- High precision 24 bit and high speed 16 bit resolution of static and differential pressure sensor (4kPa or 10 kPa)
- Plug in your standard radio control receiver for manual commands

Block Diagramm:



"Cronus an ancient Greek god was the leader and the youngest of the first generation of Titans, divine descendants of Gaia, the earth, and Ouranos, the sky. He overthrew his father and ruled during the mythological Golden Age, until he was overthrown by his own sons, Zeus, Hades, and Poseidon, and imprisoned in Tartarus or sent to rule the paradise of the Elysian Fields."



Technical Specifications

Parameter	Remarks*	Typ.	Unit
Performance			
Sensing Range Angle	In all axes	360	°
Static Accuracy	Pitch, Roll	± 0.5	°
	Heading	± 1.0	°
Dynamic Accuracy		>2.0	° RMS
Resolution		0.015	°
Sampling Rate	User selectable	1 - 800	Hz
Start-Up Time Valid Data		>1	sec
Fully stabilized data time		> 30	sec
Dimensions	Length x width x height (full featured)	67.3 x 42 x 45	mm
Weight	Full featured, including radio modem	<100	g
Measurement Range			
Accelerometers Range		±10	g
Sensitivity		2.522	mg/LSB
In-Run Bias Stability	1σ	0.7	mg
Noise density	no filtering	1.85	mg/√Hz rms
Axis Misalignment	relative to base-plate and guide pins	<0.1	°
3 dB Bandwidth		350	Hz
Gyroscope Range		±300	°/s
Sensitivity	dynamic range = ± 300 °/s	0.07326	°/s/LSB
	dynamic range = ± 150 °/s	0.03663	°/s/LSB
	dynamic range = ± 75 °/s	0.01832	°/s/LSB
In-Run Bias Stability	1σ, without Kalman Filter	0.015	°/s
Angular Random Walk	Without Kalman Filter	4.2	°/√hr
Rate Noise density	f = 25 Hz, ± 300°/s, no filtering	0.05	°/s/√Hz rms
Axis Misalignment	relative to base-plate and guide pins	<0.1	°
3 dB Bandwidth		350	Hz
Magnetic Range		±2.0	Gauss
Sensitivity	50Hz Bandwidth	120	μGauss
Noise density	f = 1kHz, no filtering	3.0	μGauss/√Hz rms
Axis Misalignment	relative to base-plate and guide pins	<0.1	°
Bandwidth		5	MHz
Absolute Pressure Sensor Range		85 – 115	kPa
Sensitivity @ 24 bit	Update Rate 3 Hz	5	mPa/LSB
Sensitivity @ 16 bit	Update Rate 800 Hz	1.2	Pa/LSB
Differential Pressure Sensor Range	2 versions available 4kPa / 10kPa	0 – 4/0 - 10	kPa
Sensitivity @ 24 bit	Update Rate 3 Hz	0.25	μPa/LSB
Sensitivity @ 16 bit	Update Rate 800 Hz	64	mPa/LSB
GPS Receiver			
Receiver Type	L1 frequency, C/A Code, 16-Channels with DGPS / SBAS		
Position Accuracy	CEP	2.0	m
	SEP	2.5	m
	SEP	5.0	m
GPS Update Rate		4	Hz
Start-up time	Hot Start / Cold Start	<3.5 / 34	sec
Tracking Sensitivity		-158	dBm
Accuracy of Time pulse Signal	Compensated	15	ns
Absolute Maximum Ratings**			
Input Voltage		-0.3 to 40	Volts
Operating Temperature Range		-20 to +85	°C
Storage Temperature Range		-40 to 125	°C
Power Consumption	@12 V Input Voltage	1	W
Acceleration		200	g
Maximum Absolute Pressure		400	kPa
Maximum Differential Pressure	4 kPa / 10 kPa Version	16/75	kPa

*Tested at 25°C except stated otherwise

**Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended period may affect device reliability.

Rev0.12 Specifications are subject to changes without notice.