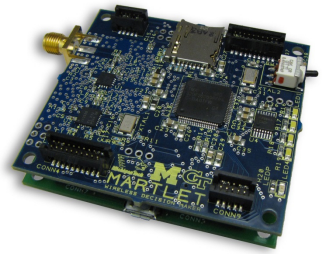
Technical Product Overview and Specifications

Martlet

Wireless Decision Maker



Overview

The *Martlet* is an extensible platform for executing computationally complex control and signal processing algorithms within a wireless network. Built around the Texas Instruments TMS320F28069 micro-controller, the *Martlet* features an auxiliary computational core for true parallel execution of time critical algorithms alongside necessary overhead computations.

Connectors on the top and bottom link all the features of the micro-controller to an array of peripheral boards, a.k.a. '*Martlet Wings*', enabling nearly any sensor, actuator, or power harvesting device to interface with the *Martlet*. Example applications include feedback control of: semi-active vibration control devices, HVAC systems, industrial processes, and large scale civil infrastructure.

Micro-controller	
Architecture	32-bit CPU w/ co-processor
FLASH	256 kB × 16-bit
RAM	100 kB × 16-bit
Clock Speed	10 – 90 MHz

Analog I/O Wing	
Channels	3*x* Input: 0–5 Volt 2*x* Output: 0–3.3Volt
Real-Time Data Throughput	1,500 samples / sec
Max. Sampling Rate	3.46 MSPS
Input Resolution	12-bit
Input Gain	1x – 100x
Input Cut-off Freq.	15 – 100 Hz
Output Resolution	5 mv
Output Bandwidth	0 – 300 Hz

General Information	
Dimensions	60mm x 60mm x 10mm +10mm per *wing*
PC Interface	JTAG & serial via USB

Radio	
Output Power	-8 dBm – 17 dBm
Receive Sensitivity	-88.5 dBm, -97.7 dBm
Active TX/RX Power	78 mA – 162 mA

Radio	
Communication Standard	IEEE 802.15.4
Frequency Band	2.4000 – 2.4835 GHz
Data Rate	250 kb/s
Range	600m line-of-sight

Core Power	
Active Current	150 mA
Sleep Current	1 mA
Input Voltage	3.8 V – 16V >6 V req'd for Analog I/O

Produced as part of a collaboration between:
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