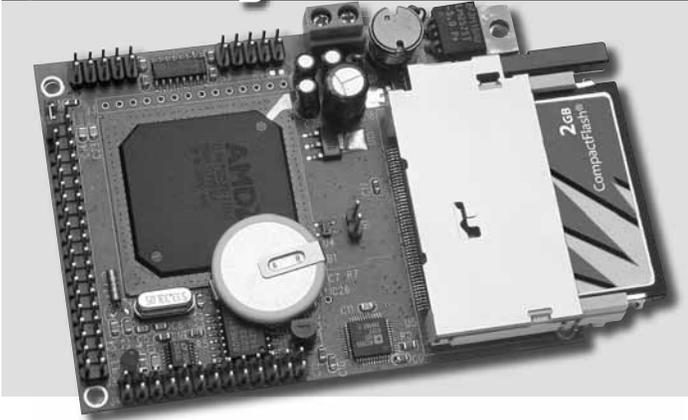


586-Engine-P™

32-bit 586-based Standalone Embedded Controller
16-bit ADC, 16-bit DAC and CompactFlash Interface



Features:

- 3.6 x 2.6 x 0.3", 110 mA at 24V DC power input
- 133 MHz, 32-bit AMD SC520, program in C/C++
- High performance hardware floating point coprocessor
- 64/256 KW SRAM, 256 KW Flash, RTC
- 32 PIOs, 7 timers, 15 interrupts
- 1 high-speed synchronous serial and 2 RS-232 ports
- 4 ch. high speed 16-bit ADCs and 8 ch. 16-bit DACs
- CompactFlash cards and FAT16 file system support

Summary

The 586-Engine-P™ (5P) is a complete C/C++ programmable standalone controller based on a 32-bit 133 MHz AMD Elan SC520. The 5P improves upon the standard 586-Engine core by integrating additional peripheral components.

Most significantly, the 5P has added voltage regulator and RS232 line drivers, making it a true stand-alone product. The 5P also adds high-speed 16-bit analog I/Os, making it appropriate for a whole new generation of high-performance data acquisition (DAQ) and precision control applications.

Inputs/Outputs

The SC520 supports 32 programmable multifunctional I/O lines (PIO) that can be used as general discrete I/O. Two industrial-standard 16550-compatible UARTs (RS232) support baud rates up to 1.152 M baud. One synchronous serial interface (SSI) supports full-duplex, high speed bi-directional communication.

A unique 16-bit parallel ADC (AD7655, 0-5V) supports ultra high-speed (1 MHz conversion rate) analog signal acquisition. The AD7655 contains two low noise, high bandwidth track-and-hold amplifiers that allow *simultaneous* sampling on two channels. Each track-and-hold amplifier has a multiplexer in front to provide a total of 4 channels analog inputs. The parallel ADC achieves very high throughput by requiring only two CPU I/O operations (one start, one read) to complete a 16-bit ADC reading. With a precision external 2.5V reference, the ADC accepts 0-5V analog inputs at 16-bit resolution of 0-65,535.

An octal rail-to-rail digital to analog converter (TLC2600) can be installed to provide eight channels of analog voltage (0-5V) outputs. At power on, all analog outputs are zero with the on-board reset. The DAC chip is accessed through a 3-wire SPI-compatible serial

interface, which is connected to the 5P's high-speed synchronous serial port (clockable up to 50 MHz). Eight built-in analog output buffers can drive rail-to-rail analog voltage with up to 15 mA.

Other Features

The 5P boots from on-board 256K 16-bit ACTF Flash. By default, 256KW low power 55 ns SRAM is installed to allow longer battery backup lifetime; this requires slower 2 wait state access to memory. Optionally, if battery backup is not required, a high speed 20 ns SRAM can be installed to allow higher performance zero wait state operation. The 5P supports low-cost, removable, up to 2 GB mass storage CompactFlash cards.

The SC520 integrates an Am586 CPU and a high performance ANSI/IEEE 754 compliant hardware floating-point unit (FPU). The FPU provides arithmetic instructions to handle numeric data and transcendental functions for sine, tangent, logarithms, etc, useful for intensive computational applications. It is estimated to be 10-50 times faster than an 8/16-bit controller without a FPU.

Up to 15 external interrupts are supported. There are a total of seven timers including one programmable interval timer (PIT) that provides three 16-bit PIT timers and three 16-bit GP timers, plus a software timer. These timers can support timing or counting external events. The software timer provides a very efficient hardware time base with microsecond resolution. A real-time clock (RTC) provides time-of-day, 100-year calendar and 114 bytes of battery backed RAM.

Signal lines on headers are 3.3V output and 5V input tolerant. Absolutely no voltage greater than 5V should be applied to any pins. With the 388 pin BGA package for the SC520, repair support is not available. The 5P can be powered by a single unregulated DC power from 8V to 30V range with the on-board high-efficiency 5V switching regulator (LM2575). The 5P can also be powered by a regulated 5V without using on-board 5V regulator.

The 5P works with TERN expansion boards including the P100, P300, P50, LittleDrive, and MotionC.

Ordering Information

586-Engine-P (5P) \$209/\$189/\$159/\$119 Qty 1/50/100/1K+

Includes SC520 with FPU, 256KW Flash, 256KW 55ns SRAM, 2 RS232s, RTC, I/Os, and 5V, 3.3V, 2.5V regulators.

NOT including add-on options. OEM option discounts available.

EV-P or DV-P kit (Software and 5P) \$359/\$809

Add-on Options:

- 1) High speed SRAM 64KW/256KW \$20/\$40
- 2) CompactFlash Interface \$20
- 3) 4 ch. 16-bit ADC (AD7655), 1MHz..... \$40
- 4) 8 ch. 16-bit DAC (LTC2600)..... \$40

Typical Order Example

586-Engine-P, 256KW SRAM
5P + 1 = \$209 + \$40 = \$249



TERN INC. 1950 Fifth Street, Davis, CA 95616 USA
Tel: 530-758-0180 • Fax: 530-758-0181

sales@tern.com http://www.tern.com