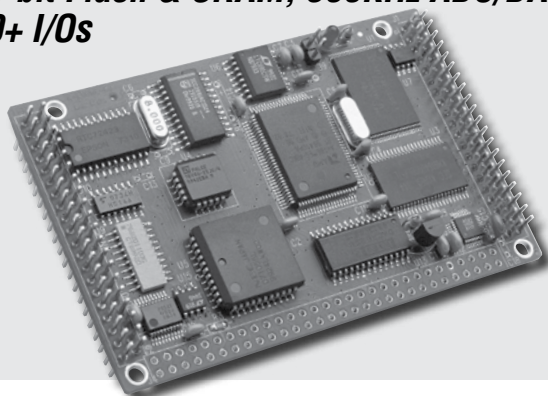


# A-Engine86™ (AE86)

**16-bit Flash & SRAM, 300KHz ADC/DAC, 50+ I/Os**



## Features:

- 3.6x2.3x0.3" for **AE86**, 3.6x2.9x0.3" for **AE86-P**
- 190/30mA normal/power-save
- 40 MHz, 16-bit CPU (186), program in C/C++
- 256KW ACTF Flash, 256KW 16-bit SRAM, 512-byte EE
- 3 serial ports, 50+ digital I/Os
- 64/256 KW 16-bit SRAM, Real-Time Clock and battery
- Processor features: PWM, counters/timers, interrupts
- 19 ch. ADCs, 6 ch. DACs
- RS-232 line-drivers, 9-35V DC Regulator (**AE86-P**)

The **A-Engine86™ (AE86)** is a high performance, C/C++ programmable controller module based on a 40 MHz, 16-bit 186-generation embedded microprocessor. Integrating high-performance peripherals, the AE86 can be used in a wide range of demanding embedded applications. The **-P (AE86-P)** version of the AE86 is modified for easier stand-alone operation, adding integrated RS232 line drivers and onboard power regulator to all other base AE86 features.

## Inputs/Outputs

The AE86 offers 50+ digital I/O channels, all of which can be programmed for either input or output. In both input and output mode, these channels can interface with TTL-level (0, 5V) digital signals through board-edge headers. 24 of these I/O channels come from an PPI component integrated onto the board, while the microprocessor offers an additional 32 multiplexed channels.

With the wide 16-bit data bus featured on the 186-generation microprocessors, it is capable of interfacing high-speed parallel ADC/DAC components. The AE86 takes advantage of this by providing an integrated 8 ch. 12-bit parallel ADC (AD7852, 0-5V), capable of supporting a 300 KHz sample rate. The AE86 is also available with a slower 11 ch. 12-bit serial ADC (P2543, 10 KHz, 0-5V). The AE86 also integrates 4 ch. 12-bit parallel DAC with the same high-speed capability for analog outputs (DA7625, 0-2.5V), as well as a serial DAC providing an additional 2 channels of 12-bit outputs (LT1446, 0-4.095V).

The AE86 can support a total of 3 serial ports (2 available off of the processor, an additional through a SCC2691). On the AE86, these ports are TTL-signals only, while the AE86-P version can support 2 RS232, with the additional port configurable as either RS232 or RS485. All 3 ports have deep hardware FIFO buffers,

# A-Engine86-P™ (AE86-P)

and can support either DMA or interrupt driven operation, meaning the AE86 is especially well-suited for simultaneous high-bandwidth serial communications across all channels.

## Board Memory

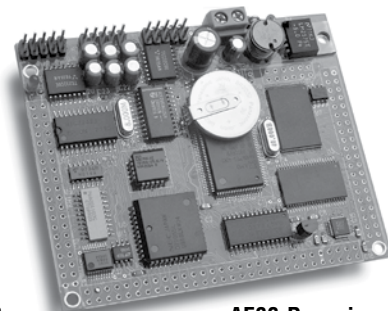
As in all real-mode x86 systems, a total of 1 MB of memory space is available for the use of code and data. On the AE86, this consists of 256 KW (512 KB) worth of Flash, and up to 256 KW (512 KB) worth of battery-backed SRAM. An additional 512-byte serial EEPROM is onboard for storage of non-volatile data (like a board identifier).

## Other Features

The AE86 supports a number of other commonly used embedded features. The microprocessor has a total of 3 16-bit timer/counters, which can be used to time events, read input pulses, or output waves with 100 nanosecond resolution.

The AE86 features several TTL-level external interrupt lines, an optional real-time clock, an onboard watchdog timer, and other basic peripherals. The AE86-P supports, by default, a 9-12VDC linear voltage regulator. It's also available with an optional 8-35VDC switching regulator for wide range flexibility.

The AE86 and AE86-P have been extended by a number of expansion boards offered by TERN. These include the MotionC-line of boards for high-performance motion control applications, or the P300/P100 boards for up to 300 additional I/O channels.



**AE86-P version**

## Ordering Information:

**AE86**                      **\$169/\$129/\$99/\$64**                      **Qty 1/100/1K/5K+**

Includes: 186, 40 MHz, I/Os, 2 UARTs, 3 timers, PPI, watchdog, EE, 256KW ACTF flash, 64KW SRAM.

**AE86-P**                      **\$189/\$151/\$113/\$66**                      **Qty 1/100/1K/5K+**

Includes: Basic AE86, and 2 RS232 line drivers, linear regulator.

## Add-on Options:

- 1) 16-bit SRAM: 256KW ..... \$20
- 2) Real-time clock (RTC) and battery ..... \$20
- 3) 3<sup>rd</sup> UART (SCC2691) + RS232/RS485 (**-P only**) ..... \$20 (+\$10)
- 4) 4 ch. 12-bit DAC, 200 KHz (DA7625)..... \$40
- 5) 2 ch. 12-bit DAC (LT1446)..... \$20
- 6) 8 ch. 12-bit ADC, 300KHz (ADS7852) ..... \$20
- 7) 11 ch. 12-bit ADC (P2543) ..... \$20
- 8) Switching Regulator (**-P only**) ..... \$20

## Typical Order Example:

**A-Engine86™**, 4 ch. 12-bit DAC (DA7652)

AE86 + 4 = \$169 + \$40 = \$209



CE FC

**1724 Picasso Avenue, Davis, CA 95618 USA**  
**Tel: 530-758-0180 • Fax: 530-758-0181**

sales@tern.com

http://www.tern.com