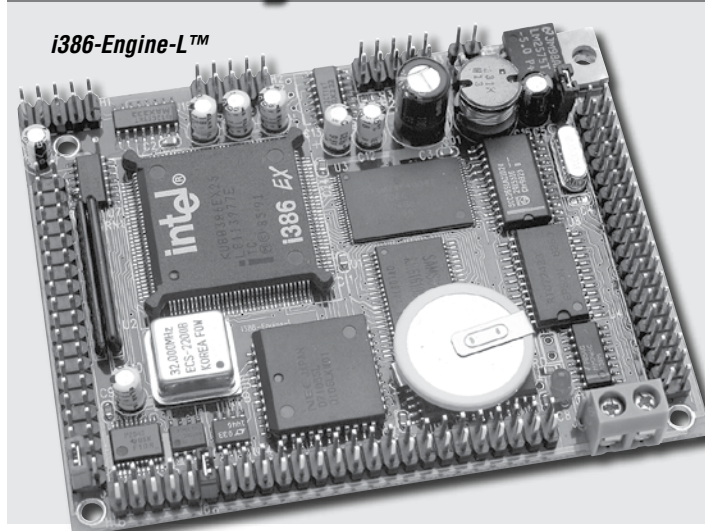# i386-Engine-L™ (IEL)

Intel 386EX, 16-bit Flash & SRAM, ADC, DAC, 50+ I/Os, 3 RS232/485, and RTC

i386-Engine-L™

Features:

- 3.6 x 2.8 x 0.3 inches
- Power consumption: 80 mA at 12V (32MHz, SR)
- Intel i386EX, C/C++ programmable
- 16-bit 256KW Flash, 256KW SRAM, 512-byte EE
- 40+ TTL I/Os
- Up to 3 serial ports, RS-232/485 drivers*
- 11 ch. 12-bit ADC and 2 ch. 12-bit DAC*
- 5V switching regulator and real-time clock, battery*
  * optional

Measuring 3.6 x 2.3 x 0.3 inches, the **i386-Engine-L™** (**IEL**) is a C/C++ programmable low cost microcontroller based on the Intel 386EX. The **IEL** is ideal for industrial process control and data acquisition.

Summary

The high performance i386EX operates with 32MHz clock as default, or works with the 64MHz clock as an option. In addition to offering a 16-bit external data bus, the **IEL** features on-board 256 KW 16-bit ACTF Flash and 256 KW 16-bit battery-backed SRAM. Application code can be easily programmed in the field via serial link. A wide range of peripheral components makes this board the ideal versatile core component for the most demanding of user applications.

A real-time clock (RTC72423) provides information on the year, month, date, hour, minute, second, and 1/64 second. A 512-byte serial EEPROM is on-board. Two i386EX internal DMA-driven serial ports support communication up to 115,200 baud. A SCC2691 Universal Asynchronous Receiver/Transmitter (UART) provides full-duplex asynchronous receiver/transmitter. The receiver is quadruple buffered to minimize the potential of receiver overrun or to reduce interrupt overhead. It incorporates a special 9-bit mode for multi-processor communications. On-board RS232 or RS485 driver can be installed for the SCC2691.

Three on-board 16-bit programmable timers/counters can be used to count external events or to generate pulse outputs.

Schmitt-trigger inverters are provided to increase noise immunity for external interrupt inputs. A supervisor chip (691) provides power failure detection and a watchdog timer.

The i386EX provides 32 multifunctional I/O pins. A PPI (82C55) provides 24 user programmable bi-directional I/O lines. The 82C55 PPI can be used, in particular, to interface to a LCD and keypad (Kpad-I/O) offered by TERN.

A serial 12-bit ADC (P2543) may be installed, offering 11 single-ended 0-5V inputs with a 20 KHz sample rate. A 2-channel 12-bit serial DAC (LT1446) provides 0-4.095 V analog voltage outputs capable of sinking or sourcing 5 mA.

9-12V DC can power the IEL with a 5V linear regulator. Optional switching regulator (LM2575) can be used to allow up to 30V unregulated DC power input and reduce heat. Using switching regulator, in the power off mode, the IEL consumes very low power (micro-amp).

Signals routed to J1 and J2 (20x2 pin headers) are compatible with IE, IEP, IEM, and ID. IEL has the same mechanical dimension as the AE86P. This allows the IEL to be compatible with a range of TERN expansion boards.

In particular, mass external memory can be added via J1 bus header with **MMB** or **FC-0** to support PCMCIA or CompactFlash Cards of up to 2GB. An additional 33 channels of 12-bit ADC and 6 additional channels of 24-bit ADC inputs can be added with the **MMB**.

Ordering Information

IEL	$189/$129/$99	Qty 1/100/1K+

Includes intel 386EX, 32MHz clock, 2 UARTs, 3 timers, 82C55 PPI with 24 I/O lines, watchdog timer, 512-byte EE, 256KW 16-bit ACTF™ Flash and 64KW SRAM.

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

Add-on Options:

1) SRAM 256KW..$20
2) Real-time clock (RTC) and battery......................................$20
3) UART SCC2691 with a) RS232, or b) RS485........................$30
4) 11 ch. 12-bit ADC (P2543) $20
5) 2 ch. 12-bit DAC (LT1446)...$20
6) 64MHz clock with 386EX...$30
7) Switching Regulator (SR) $20
8) Sockets for expansion: two 20x2, one 25x2 ....$9

Typical Order Example:

I386-Engine-L™, 11 ch. 12-bit ADC
IEL + 4 = $189 + $20 = $209