

# HPC16400E/HPC36400E/HPC46400E

## High-Performance Communications microController

### General Description

The HPC16400E is an upgraded HPC16400. Features have been added to support V.120 and the UART has been changed to provide more flexibility and power. The HPC16400E is fully upward compatible with the HPC16400.

The HPC16400E has 4 functional blocks to support a wide range of communication application—2 HDLC channels, 4 channel DMA controller to facilitate data flow for the HDLC channels, programmable serial interface and UART.

The serial interface decoder allows the 2 HDLC channels to be used with devices using interchip serial link for point-to-point and multipoint data exchanges. The decoder generates enable signals for the HDLC channels allowing multiplexed D and B channel data to be accessed.

The HDLC channels manage the link by providing sequencing using the HDLC framing along with error control based upon a cyclic redundancy check (CRC). Multiple address recognition modes, and both bit and byte modes of operation are supported.

The HPC16400E is available in 68-pin PLCC, LCC, LDCC and 84-Pin TapePak® packages.

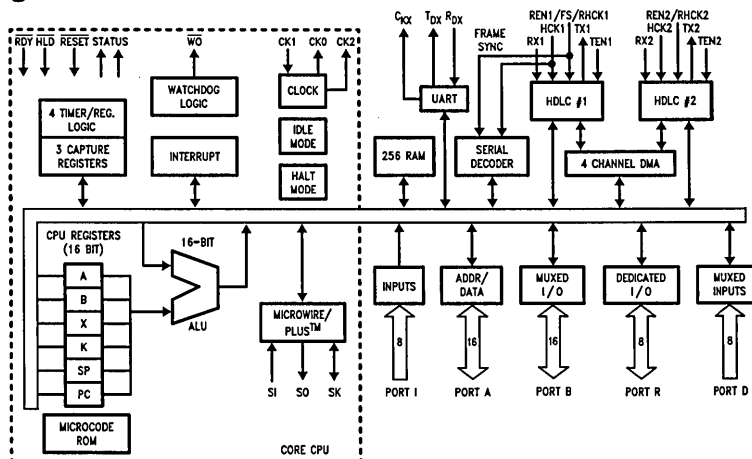
### Features

■ HPC™ family—core features:

- 16-bit data bus, ALU, and registers
- 64 kbytes of external memory addressing
- FAST!—20.0 MHz system clock
- Four 16-bit timer/counters with WATCHDOG logic

- MICROWIRE/PLUS™ serial I/O interface
- CMOS—low power with two power save modes
- Two full duplex HDLC channels
  - Optimized for X.25, V.120, and LAPD applications
  - Programmable frame address recognition
  - Up to 4.65 Mbps serial data rate
  - Built in diagnostics
  - Synchronous bypass mode
  - *Optional CRC generation*
  - *Received CRC bytes can be read by the CPU*
- Four channel DMA controller
- 8 or 16-bit external data bus
- UART
  - Full duplex
  - 7, 8, or 9 data bits
  - Even, odd, mark, space or no parity
  - 7/8, 1 or 2 stop bit generation
  - Accurate baud rate generation up to 625k baud without penalty of using expensive crystal
  - Synchronous and asynchronous modes of operation
- Serial Decoder
  - Supports 6 popular time division multiplexing protocols for inter-chip communications
  - *Optional rate adaptation of 64 kbit/s data rate to 56 kbit/s*
- 544 kbytes of extended addressing
- Easy interface to National's DASL, 'U' and 'S' transceivers—TP3400, TP3410 and TP3420
- Commercial (0°C to +70°C), industrial (−40°C to +85°C) and military (−55°C to +125°C) temperature ranges

### Block Diagram



TL/DD/10422-1