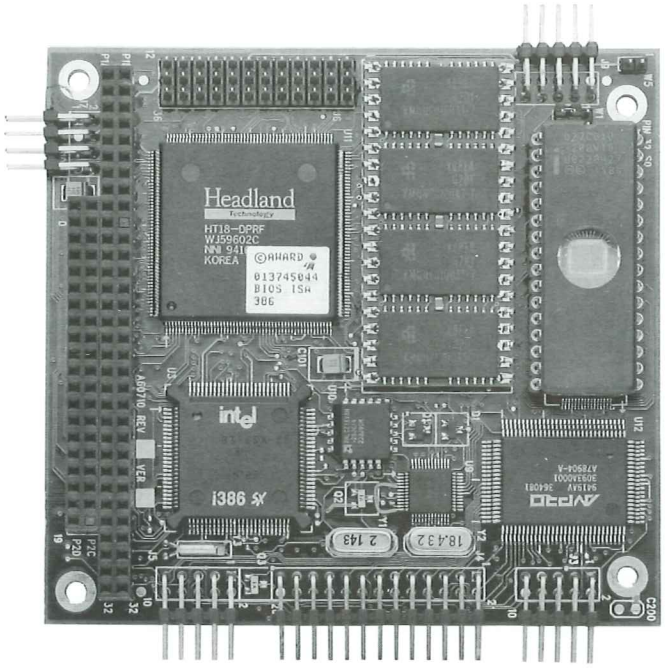
CoreModule™/386-II

PC/AT-compatible PC/104™ CPU module



- **PC/AT motherboard functions:**
  - **25 MHz Intel 386SX CPU**
  - **Up to 4M bytes factory installed and tested DRAM**
  - **16-bit expansion bus**
  - **Dual-serial and parallel controller**
- **Optimized for embedded applications:**
  - **Wide operating temperature**
  - **Low power consumption**
  - **Batteryless boot**
  - **Enhanced embedded-PC BIOS**
  - **Socket for bootable "Solid State Disk"**
  - **Watchdog timer**
  - **Advanced Power Management**
- **Compact PC/104 form-factor**

The CoreModule/386-II offers complete PC/AT compatibility in a compact, preconfigured module. Within just 14 square inches of space, the CoreModule/386-II includes the equivalent functions of a PC/AT motherboard plus several additional expansion cards. Performance-critical embedded applications that formerly required chip-based custom designs can now benefit from an off-the-shelf module with the power of a 25 MHz 80386SX CPU, along with hardware and software standards like PC/AT and MS-DOS compatibility.

The CoreModule/386-II is designed to meet the demands of embedded systems, through its extreme compactness, low power consumption, +5V-only operation, wide operating temperature range, and high reliability.

Configuration Flexibility

The CoreModule/386-II can be used as a macrocomponent, plugged into a proprietary application board, or it can be combined with Ampro's PC/104-compatible MiniModule™ expansion products to form compact, highly integrated control subsystems. Multiple modules can be stacked together without the cost and space penalties of additional mounting hardware, or they can be mounted separately on a custom circuit board.

Solid State Disk Reliability

One of the unique features of the CoreModule/386-II is its byte-wide memory device socket that is typically used as a Solid State Disk (SSD), substituting EPROM, Flash EPROM, or nonvolatile RAM (NOVRAM) memory devices for conventional disk drives. Using Ampro's SSD Support Software, any DOS-based-software—including the operating system, programming languages, drivers, and application programs—can easily be run from SSD without modification.

Enhanced Embedded-PC BIOS

Another very important feature of the CoreModule/386-II is its inclusion of enhanced BIOS services and functions that meet the unique requirements of embedded microcomputer system applications. A detailed description of these BIOS enhancements appears in the Ampro Embedded-PC BIOS data sheet.

EMBEDDED-PC PC/104 MODULES

ORIGINATED BY AMPRO

SPECIFICATIONS

AT MOTHERBOARD FUNCTIONS

- 80386SX CPU, 25 MHz
- Connector for 80387SX math coprocessor adapter
- System DRAM: 2M bytes directly surface-mounted, or 4M bytes via soldered on DRAM module. 8M and 16M available by special order.
- 7 DMA channels (8237 equivalent)
- 15 interrupt channels (8259 equivalent)
- 3 programmable counter/timers (8254 equivalent)
- PC/AT-compatible keyboard port
- Speaker port with 0.1 watt drive
- Real time clock with CMOS RAM (MC146818 equivalent); requires external 3.0-3.6 V battery (Tadiran TL-5242/W or equivalent)
- Battery-free operation option
- Award ROM-BIOS with Ampro extensions (see Ampro Embedded-PC BIOS data sheet)

ADDITIONAL ONBOARD FUNCTIONS

- Two PC-compatible COM ports with full handshaking:
  - —One serial port 16C450 equivalent
  - —One serial port 16C550 equivalent with 16 byte data FIFOs
  - —Onboard generation of ±9V for RS232C signal levels
  - —Serial ports support RS232 (direct cabling) or RS485 (via the Ampro RS485 Adapter)
- Parallel printer port with bidirectional data lines
- One byte-wide memory socket:
  - —Usable with 32K-1M byte EPROMs, 32K-512K Flash EPROMs, 32K-512K SRAMs, or 32K-512K NOVRAMs
  - —RTC backup battery converts SRAM to NOVRAM
  - —Onboard programming of 5V and 12V Flash EPROMs
  - —Software-controlled write protect
  - —Configurable as 32K-, 64K-, or 128K-byte window, addressed in the range D0000-EFFFFh
  - —Expandable with PCMCIA memory cards using Ampro Memory Card Adapter
  - —Supports Solid State Disk operation when SSD software is used
  - —Usable with 1M or 2M byte DiskOnChip read/write Flash SSD device
- 2K bit configuration EEPROM, with 512 bits available for OEM use
- Watchdog timer:
  - —Utilizes real-time clock alarm function
  - —Timeout triggers hardware reset or non-maskable interrupt

ORDERING INFORMATION

When ordering, refer to the following model numbers:

- **CM2-3SX-K-74** Development Kit, CoreModule/386-II, 4M RAM
- **CM2-3SX-Q-73** CoreModule/386-II, 2M RAM (Quantity Orders)
- **CM2-3SX-Q-74** CoreModule/386-II, 4M RAM (Quantity Orders)
- **SWR-SSD-K-01** Solid State Disk Support Software for DOS operating systems
- **CBL-XTP-Q-01** CoreModule cable set (2 serial, parallel, utility, and DC power)
- **ACC-MCC-Q-06** 80387SX math coprocessor carrier

CoreModule/386-II Development Kits include: CoreModule/386-II with 4M bytes RAM, DR DOS operating system, interface cable set (2 serial, parallel, utility, and DC power), backup battery, math coprocessor carrier, technical manuals, utility software, and mounting hardware. Quantity orders include the CoreModule/386-II with your choice of either 2M or 4M bytes RAM and mounting hardware. 8M and 16M bytes of RAM available by special order.

Development Chassis

- **EXP-CHS-K-71** CoreModule Development Chassis (110V)
- **EXP-CHS-K-72** CoreModule Development Chassis (220V)

The CoreModule Development Chassis includes a module carrier board (provides two headers for stacking CoreModule and MiniModules), 50W power supply, 1.2M and 1.44M floppy drive, 2-slot backplane, all appropriate interface and power cables, and technical manual.

An Integrated Development System is available which consists of the above Development Kit plus a CoreModule Development Chassis (includes 50W power supply, 1.2M and 1.44M floppy drive, 2-slot backplane, and all cables), and a choice of disk and video controller modules. The CoreModule, video controller, disk controller, and associated cables are preinstalled. *Please refer to the CoreModule Integrated Development System data sheet for more information.*

Please contact your local Ampro representative or Ampro Sales Administration for ordering information.

SUPPORT SOFTWARE

- Embedded-PC BIOS extended features:
  - —Solid state disk (SSD) support
  - —Extended floppy services
  - —SCSI services
  - —Watchdog timer support
  - —Fast boot option
  - —Fail safe boot support
  - —Battery-free boot support
  - —Serial console option
  - —Serial loader option
  - —EEPROM access function
  - —OEM customization hooks
- Embedded-PC Utilities:
  - —Serial loader program
  - —Serial SSD programmer
  - —Setup access utility
  - —SCSI support
  - —Watchdog timer utility

See Ampro Embedded-PC BIOS data sheet for additional details.

MECHANICAL AND ENVIRONMENTAL

- Size: 3.6 × 3.8 × 0.9* in. (90 × 96 × 23mm)
  * Includes stackthrough pins. See PC/104 Specification for stacking and other dimensions.
- PC/104:
  - —16-bit double-stackthrough bus
  - —Four mounting holes
- Power requirement:
  - —690 mA at +5V ±5% (typical, includes 2M RAM)
  - —+12V required for 12V Flash device programming
- Operating environment:
  - —0° to 70° C temperature, standard; extended temperature screening available by special order
  - —5% to 95% relative humidity, non-condensing
- Storage temperature: -55° to +85° C
- Weight: 2.96 oz. (83 gm)

NOTE: Contact Ampro regarding custom configurations and special order options.