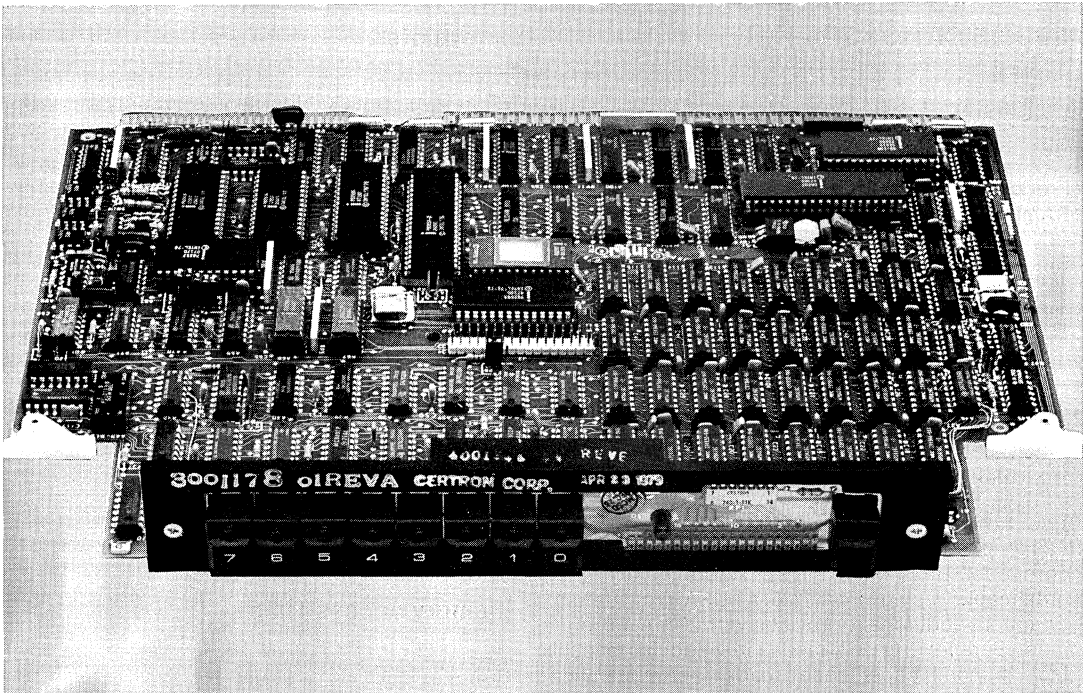# intₑl

MODEL 505
INTEGRATED PROCESSOR CARD

- **Single Electronic Board with 8085A-2 CPU, 64K Bytes RAM and 4K Bytes ROM**

- **Increases Card Slot Availability on the Intellec® Series II Microcomputer Development System**

- **Fully Software Compatible with the 8080-Based Integrated Processor Board**

- **High Performance 8085A-2 Based Integrated Processor Card Upgrades Intellec® Series II Microcomputer Development Systems to the Performance of Series II/85 Systems**

- **Additional Functions Available Through MULTIBUS™ Interface—**
  - **— Local Interrupt Controller**
  - **— Programmable Interval Timer**
  - **— Two Channels of USARTs**

The Intellec® Series II/85 Model-505 Integrated Processor Card (IPC) is a single board upgrade for all 8080-based Intellec Series II Microcomputer Development Systems. The IPC is an 8085A-2 based CPU board which contains 64K bytes of RAM, 4K bytes of ROM, two 8259 interrupt controllers, two 8251 USARTs, an 8253 interval timer, MULTIBUS™ compatible interface, and special interfaces to the Intellec Series II Microcomputer Development System. The IPC is fully software compatible with the 8080-based integrated processor board.

FUNCTIONAL DESCRIPTION

Hardware Components

The heart of the IPC is an Intel NMOS 8-bit microprocessor, the 8085A-2, running at 4.0 MHz. 64K bytes of RAM memory are provided on the board using 16K RAM chips. 4K of ROM is provided, preprogrammed with system bootstrap "self-test" diagnostics and the Intellec Series II/85 System Monitor. The eight-level vectored priority interrupt system allows interrupts to be individually masked. Using Intel's versatile 8259A interrupt controller, the interrupt system may be user programmed to respond to individual needs.

SYSTEM IMPROVEMENTS

The IPC provides two main advantages over its predecessor, the 8080-based Integrated Processor Board (IPB). The first advantage is the higher processing speed. The second advantage is that it provides twice the memory.

Higher Speed—The IPB uses an 8080A-2 microprocessor with a 23.4000 MHz crystal to derive a clock cycle time of 384.6nsec, and executes with one wait state on memory read cycles, and 2 wait states on memory write cycles. The IPC uses an 8085A-2 microprocessor with an 8.0000 MHz crystal to derive a clock cycle time of 250nsec, and runs with the same number of wait states as the IPB. The IPC thus provides an increase in processing speed of approximately 54% over the IPB. The overall system throughput improves correspondingly. However, the amount of improvement is a function of the type and the length of the programs being executed, as well as the type of storage devices attached to the system.

Saves One Card Slot Space—The IPC contains an additional 32K bytes of RAM over the IPB, to provide a total of 64K bytes of system memory on one card. The increased on-board RAM size frees up one slot in the card cage of the Series II. For a typical user of ICE-86™ or ICE-88™ emulators, this additional slot will eliminate the need to purchase an expansion chassis.

SPECIFICATIONS

Host Processor (IPC)

Processor—8085A-2 based, operating at 4.0 MHz.
RAM—64K on the CPU card.
ROM—4K (2K in monitor, 2K in boot/diagnostic)
Bus—MULTIBUS™ bus, maximum transfer rate of 5 MHz.
Clocks—Host processor crystal controlled at 4.0 MHz; bus clock, crystal controlled at 9.8304 MHz.

I/O Interfaces

Two Serial I/O Channels, RS232C, at 110-9600 baud (asynchronous) or 150-56K baud (synchronous). Baud rates and serial format fully programmable using Intel 8251A USARTs. Serial Channel 1 additionally provided with 20 mA current loop. Parallel I/O interfaces provided for paper tape punch, paper tape reader, printer, and UPP-103 Universal PROM Programmer.

Interrupts

Eight-level, maskable, nested priority interrupt network initiated from front panel or user selected devices.

Direct Memory Access (DMA)

Standard capability on MULTIBUS™ interface; implemented for user selected DMA devices through optional DMA module—maximum transfer rate of 5 MHz.

Memory Access Time

RAM—470 ns max
PROM—540 ns max

ELECTRICAL CHARACTERISTICS

DC Power Supply

Voltage Requirements (Volts)	Worst Case Current Requirements (Amperes)
+ 5 ± 5%	4.2
+ 12 ± 5%	0.5
− 12 ± 5%	0.2
− 10 ± 5%	0.02

ENVIRONMENTAL CHARACTERISTICS

Operating Temp.:	Board Level	5° - 55°C (41°F - 131°F)
	System Level	16° - 32°C (61°F - 90°F)
Humidity:		20% to 80%

EQUIPMENT SUPPLIED

8085 Based Integrated Processor Card (IPC)

DOCUMENTATION SUPPLIED

Intellec® Series II Model 22X/23X Installation Manual, 9800559

Intellec® Series II Hardware Reference Manual, 9800556

Intellec® Series Monitor Source Listing, 9800605

Additional manuals may be ordered from any Intel sales representative or distributor office, or from Intel Literature Department, 3065 Bowers Avenue, Santa Clara, California 95051.

ORDERING INFORMATION

Part No.   **Description**

MDS-505*   Integrated Processor Card upgrade package for Intellec® Series II Microcomputer Development System (110V/60Hz or 220V/50Hz). Upgrades Models 220, 221, 230, 231, 240, and 241 to the performance of the 8085A-2 based systems.

"MDS" is an ordering code only, and is not used as a product name or trademark. MDS® is a registered trademark of Mohawk Data Sciences Corp.