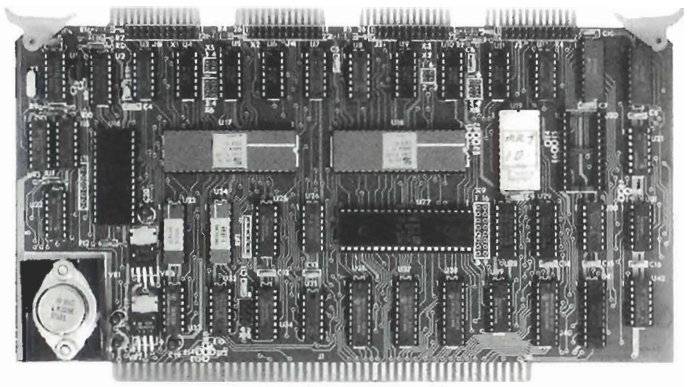
MPC-4

Multi-Port Communicator with Four Serial Ports



The MPC-4 is a S-100 bus intelligent multi-port communications board that provides four buffered RS-232C serial I/O channels to allow for multi-user and communications applications, and is controlled by the powerful Z80 microprocessor.

SD SYSTEMS
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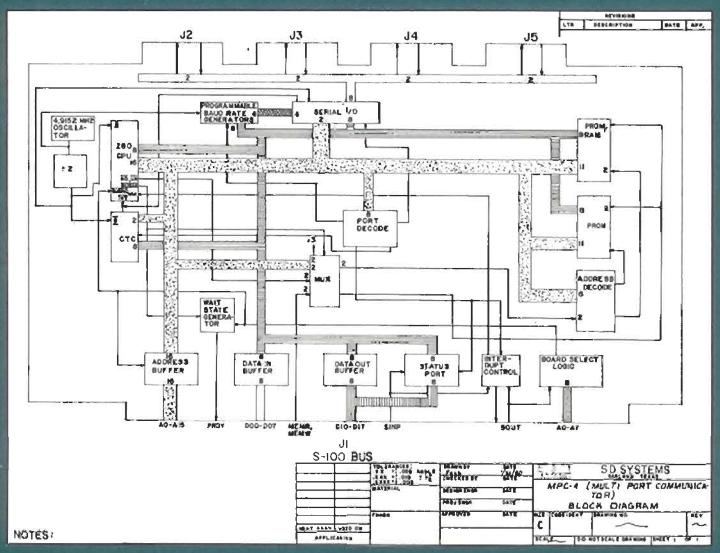

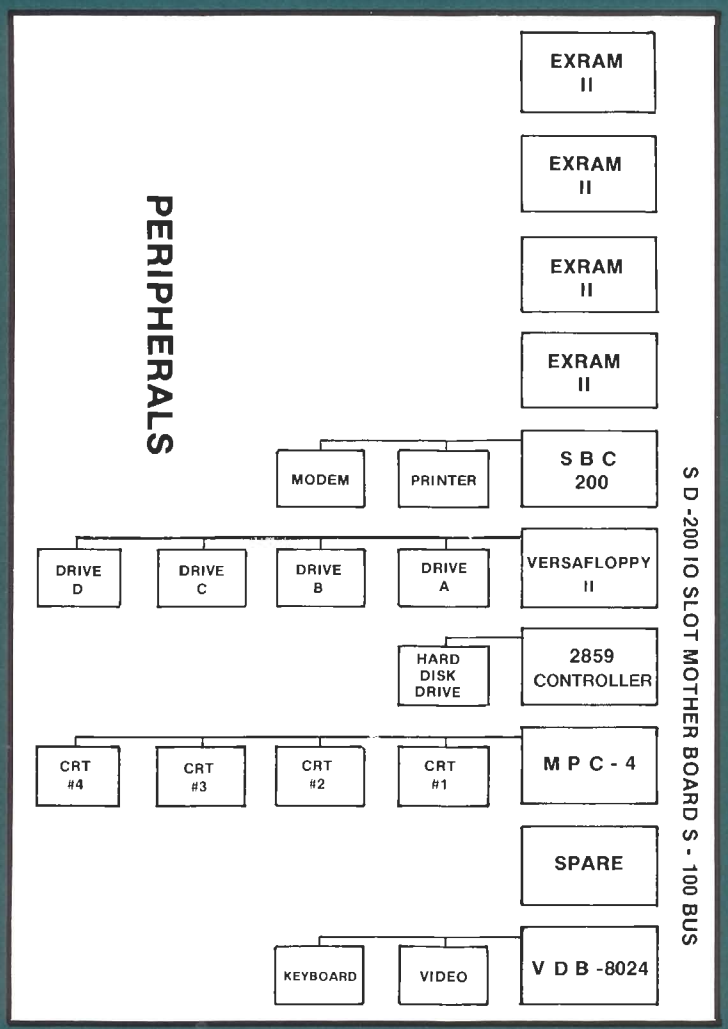

Features

- S-100 Bus Compatible
- On-board Z80 Central Processor Board
- A Real Time Clock
- Programmable Baud Rate for Individual Terminals
- On-board RAM (1K Static)
- Two DARTs (Dual Asynchronous Receiver Transmitter)
- Four (4) Buffered Serial Input/Output Ports
- 2K PROM (2716)
- "FIFO" Buffers
- 4 Counter/Timer Channels

Functional Description

The adjacent block diagram indicates the functions of various MPC-4 components and features.

The heart of the MPC-4 is the powerful Z80 microprocessor which provides control for the DARTs that handle I/0 to all of the four serial ports. The Z80 CTC (Counter/Timer Circuit) contains four independent channels.

The Standard firmware uses one of these channels to generate a time of day clock. With additional firmw the other three channels are available for uses such as communications time-out interrupts or event timers.

The Oscillator is a crystal controlled circuit providing a 4.9152 Mhz clock and is divided in half by the baud rate generator to provide the system clock.

JI Pin Description

SIGNAL	PIN #	DIRECTION
DI0-DI7	95, 94, 41, 42, 91, 92, 93, 43	Output
DO0-DO7	36, 35, 88, 89, 38, 39, 40, 90	Input
A0-A7	79, 80, 81, 31, 30, 29, 82, 83	Input
A8-A15	84, 34, 37, 87, 33, 85, 86, 32	Input
PRDY	72	Output
SOUT	45	Input
SINP	46	Input
VI1	5	Output (Optional)
VI2	6	Output (Optional)
VI3	7	Output (Optional)
VI4	8	Output (Optional)
MEMR	47	Input
MEMW	68	Input
POC	99	Input
+8	1, 51	
+16	2	
-16	52	
GND	50, 100	

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Each of the four baud rate generators generate any of sixteen (16) standard baud rates. These include: 50, 75, 110, 134.5, 150, 300, 600, 1.2K, 1.8K, 2.0K, 2.4K, 3.6K, 4.8K. 7.2K, 9.6K and 19.2K Baud.

Two Z80 DARTs provide four (4) RS-232C serial I/O ports. These can be programmed for diverse functions. In combination with SD Systems Communications Oriented Multi-user Operating System (COSMOS), they are programmed to interrupt whenever a channel has a receive character available. Vectored Interrupts provide efficient handling of the input data stream.

As the MPC-4 is an intelligent multi-port communicator board, it is capable of off-loading time costly tasks such as editing, protocol handling and line handling from the CPU board (the SBC-200). Freeing the CPU board to complete other tasks creates a more efficient and higher performance system.

RS-232C Connectors

J2-5 Pin	EIA Pin	Signal	Direction
5	3	RXD	Output
3	2	TXD	Input
8	5	CTS	Output
7	4	RTS	Input
11	6	DSR	Output
14	20	DTR	Input
15	8	CDET	
18	22	RI	Input
22	24	TXCT	Output
8	17	RXCM	Input
13	7	GND	
4	15	TXCM	Input
-	1	GND	

General Description

The MPC-4 design meets the requirements of the Z80 central processor and offers four (4) buffered RS-232C serial I/O ports, a real time clock, a programmable baud rate up to 19.2K for each terminal, on-board RAM (1K), two DARTs (Dual Asynchronous Receiver Transmitter) for serial interfacing and a four channel CTC (Counter/Timer Channel).

Standard software for the MPC-4 provides asynchronous transmission with an 80 character "FIFO" input buffer and a 128 character "FIFO" output buffer.

On-board static RAM (1-K) allows for basic multi-task applications. Additional memory can be programmed through two 24 pin sockets to allow for diverse single and polled communications protocol applications.

The MPC-4 appears as a memory page in the computer system in a manner similiar to the ExpandoRAM II logic.

For those with advanced multi-user requirements, the MPC-4's design includes capabilities that allow up to 15 MPC-4's to be addressed independently on one bus.

Application Data

The MPC-4 is ideally suited for multi-task applications and has potential for communications protocol. The reprogramming of the available PROM and the interchange of the DARTs with an SIO (Synchronous Input/Output chip) will allow the MPC-4 both SDLC and BISYNCH compatibility with full duplex control.

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