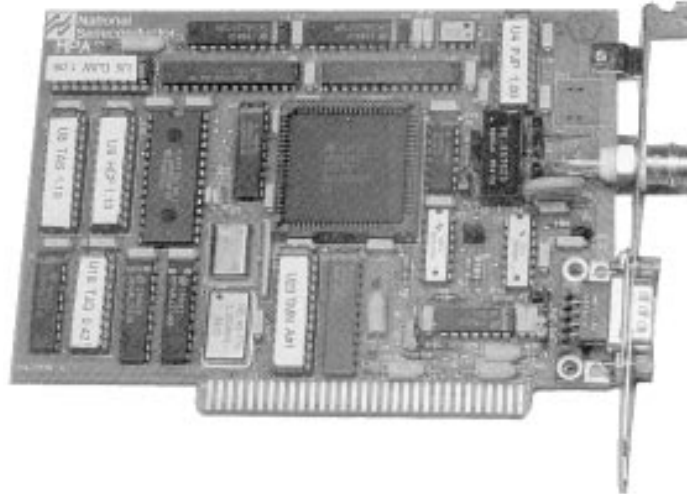


IBM® 3270/5250 Connectivity

National Semiconductor
System Brief 110
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IBM 3270/5250 Connectivity



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SYSTEM DESCRIPTION

IBM Connectivity is defined by three major protocols IBM 3270, IBM 3299 and IBM 5250. The rules of the communication protocol defines the physical, electrical, and software specifications required to transfer data between systems. The physical specifications include the network architecture, the type of connecting media, the connectors, and maximum distance between connections. Since these systems have broad networking needs and support large numbers of equipment, they may be configured in "stars", "loops", or "daisy chains" and often use coaxial or twisted-pair cable. The 3270 protocol defines a point-to-point, deterministic connection between the host controller and peripherals; thus, adapting the system to the new directions in SNA and the migration out to the peripherals of processing

power. The 3270/3299 serial communications protocol was specifically designed for the controller-peripheral link in 370 class mainframes. The 5250 serial communications protocol was developed originally for Series 3 and has since become widely used in mid-range System 3x, which can vary from small office processors to very powerful processors with extensive networking facilities.

Typical applications include terminal emulation boards for PCs, stand-alone terminals, printer interfaces, and cluster controllers.

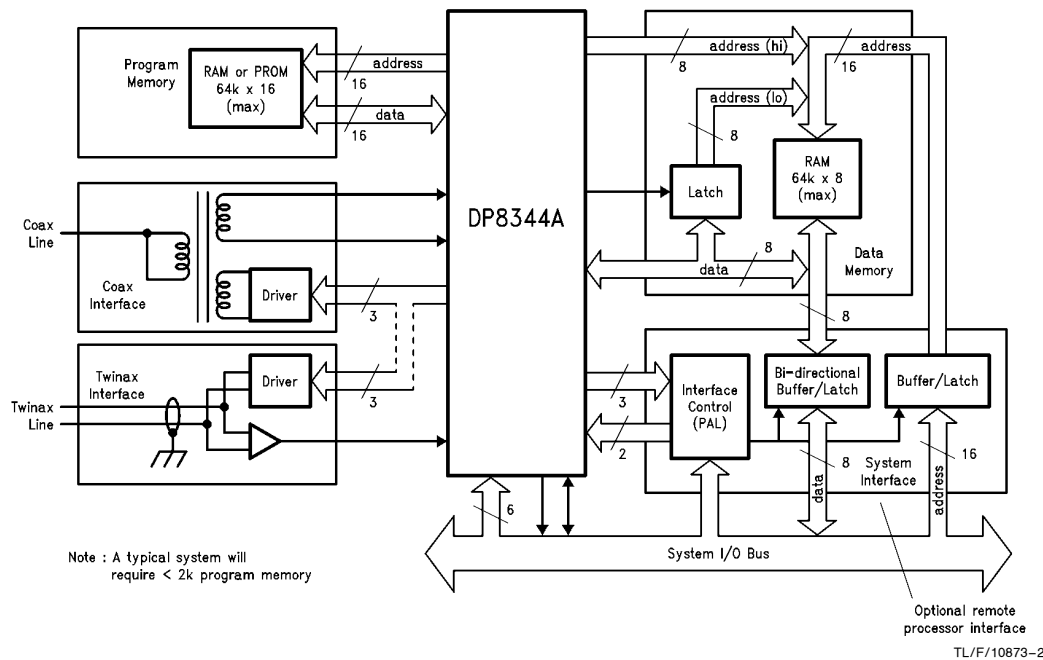
SYSTEM BLOCK DIAGRAM

Generic block diagram of the major functional blocks. Include optional functions and alternatives.

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SB-110

Block Diagram of Typical BCP® System



KEY DESIGN CHALLENGES

- **Programmability**
Allow users to enhance and adapt to IBM changes in product features in software, not hardware. Save design and development costs, and update existing products in the field.
- **Short Interrupt Latency**
To meet the 5.5 μ s response time required by IBM, and to insure quick interrupt processing for any type of communications system.
- **Efficient Command Processing**
Access data and instruction memory simultaneously and process commands efficiently.
- **Remote Processor Interface**
Work with another processor, to off-load the host in a system.

KEY COMPONENTS

Biphase Communications Processor (BCP) DP8344

RISC processor and software—configurable transceiver on a single low power M²CMOST™ chip. Uses 8k x 8 SRAM to store the program and data in memory.

The Biphase Communications Processor—BCP is the “Communications Processor” for the IBM environment. It integrates a very fast, full function microprocessor with highly specialized transceiver circuitry. The combination of speed, power and features allows the designer to easily implement a state-of-the-art communications interface.

The transceiver is designed to simplify the handling of specific communications protocols. This feature allows for quick development of interfaces and software with little concern for the “housekeeping” details of the protocol being used.

The BCP is designed to stand alone and is fully capable of implementing a complete communications interface, using the processor's spare power to control the complete system.

BILL OF MATERIALS				
Function	Description	NSC Part Number	Other Mfg	Quantity
Processor	Biphase Communcation Processor	DP8344		1
Clock	Crystals 18.86 MHz		✓	1
Clock	Crystal Oscillator 8.00 MHz		✓	1
Interface	Line Drivers	DS3487		1
Interface	Comparators	LM361		2
Interface	Line Transformer			1
Interface	Current Drivers	75110A, 75112		2
Interface	PALS	PAL16R4		1
		PAL20L8		1
		PAL20L10		2
		PAL16L8		1
		PAL16R8		1
Memory	SRAM	8k x 8, 32k x 8		3
	Logic	74HCT574		1
		74HCT521		1
		74LS646		3
		74LS245/373		3

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