National Semiconductor

DP839EB-AT
16-Bit PCAT Ethernet Evaluation Board

General Description

The DP839EB-AT is designed as a high performance Ethernet adapter card which utilizes National Semiconductor's Ethernet chipset (DP8390, DP8391 or CMOS DP83910, DP8392). It provides a low-power thick (10Base5) or Thin (10Base2) Ethernet interface for the 16-bit PCAT bus.

Special features of the DP839EB-AT include shared buffer memory architecture, zero wait state shared memory arbitration, and word or byte wide transfers to/from the system bus. Also, the use of the CMOS DP83910 Serial Network Interface chip allows for a low power implementation. The shared memory is configurable to 8k x 16 or 32k x 16 and is mapped directly into the PCAT address space. This allows for highly efficient block data transfers between buffer memory and system memory. The zero wait state shared memory arbiter is designed to give the CPU immediate access to the buffer memory when the DP8390 NIC is not making a shared memory access. This increases system bus efficiency and allows optimal bus bandwidth.

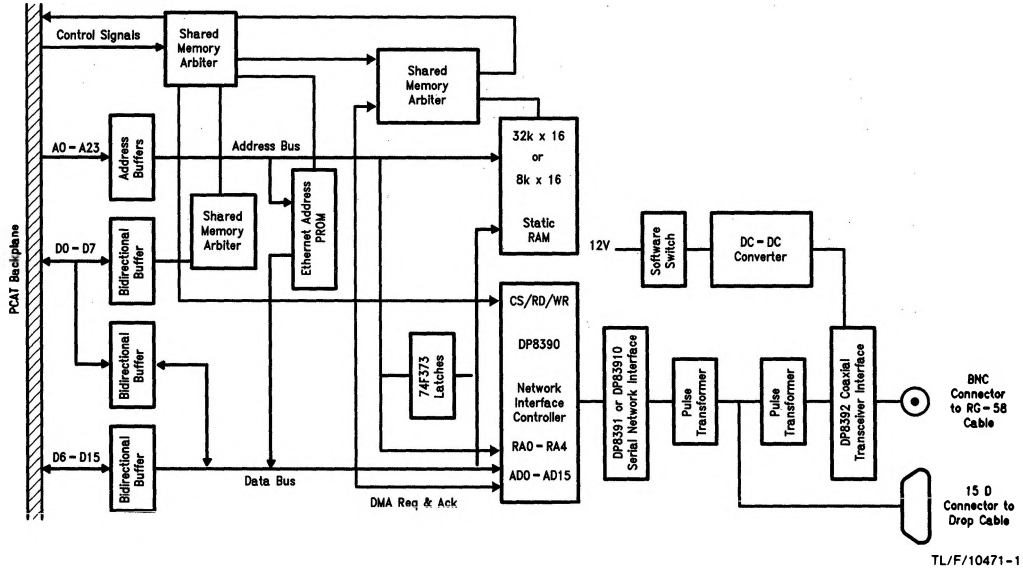
The adapter's ability to perform byte or word wide shared memory transfers assures the system of full utilization of the 16-bit PCAT bus. In order to achieve this design, a state machine was designed which quickly notifies the CPU that 16-bit transfers may be used. On a typical block move cycle to the adapter card shared RAM, the first 16-bit move will take place as two byte moves, then all successive moves, then all successive moves will take place as word transfers.

The DP839EB-AT is designed to make software interface and configuration as simple as possible. All variable card parameters (Interrupt number, Base Address, thick or thin Ethernet, and memory size) are software selectable, eliminating the need for hardware jumpers. Supplied demonstration code will provide all desired network functions and is coded in "C" for portability.

Features

- Efficient 16-bit shared buffer memory system bus interface
- Memory mapping supports 14 possible base addresses in real or extended memory
- Supports byte-wide or word-wide buffer memory transfers
- Zero wait state shared memory arbitration
- Software configurable for thick or thin wire Ethernet
- Low power (mostly) CMOS implementation
- No DMA channel required
- Full diagnostic software available, including Novell NetWare drivers
- Diagnostic LEDs

Block Diagram



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