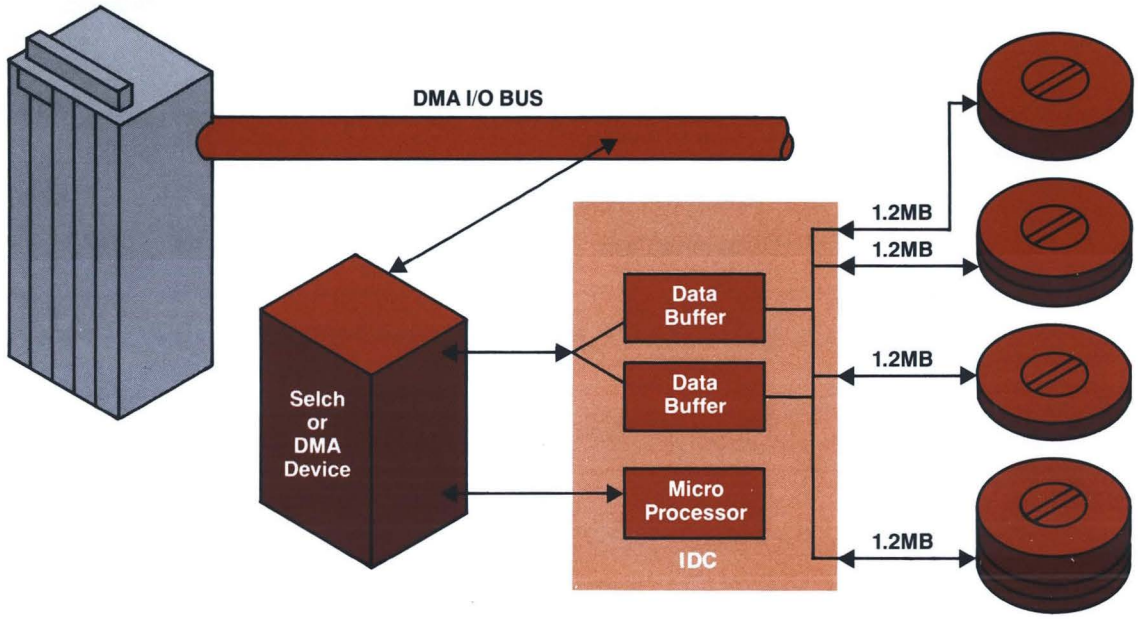
PERKIN-ELMER

Series 3200

IDC

Intelligent Disk Controller



Product Overview

Perkin-Elmer's Intelligent Disk Controller (IDC) provides a high-performance interface between the Perkin-Elmer Series 3200 processor family Direct Memory Access (DMA) bus and Perkin-Elmer's high-speed disk storage products. The IDC allows for the connection of up to four disk units with the flexibility of allowing all four to be of different capacities. State-of-the-art technology allows this system-enchancing capability to reside on a single-board controller.

An aggregate throughput rate of 2.6MB per second can be achieved with the on-board sector buffering and microprocessor-controlled design. This design helps to increase application/configuration flexibility while maximizing system reliability.

Features

- Automatic Error Checking and Correction (ECC)
- Support of various capacity and type disk drives
- Multiple sector buffering
- Overlapped seeks of up to four drives
- On-board diagnostics
- Single board design

Operational Characteristics

The Intelligent Disk Controller has been designed to operate through the Perkin-Elmer Series 3200 Selector Channel on any Series 3200 DMA bus. The IDC will transfer data to this Selector Channel at up to 2.6MB per second. Data buffers on the IDC provide transparent management of the data flow between each disk drive and the processor DMA bus.

There are two data buffers on the IDC. These buffers are each 256 bytes in size and each can contain a single sector of data. Any number of sectors can be transferred with one read or write command. An automatic head advance across head boundaries permits multiple-sector block transfers under IDC control, thus reducing software overhead.

Operational Characteristics (Continued)

By using full sector buffers, all data-delay errors are eliminated in disk I/O operations. Also reduced is the rotational latency when switching between disk drives, since all sectors are identified by their header blocks.

The IDC will automatically detect and correct data errors under hardware control. During error recovery, the controller will perform one retry, and then invoke the error correction. The IDC can detect and correct data error bursts up to 11 bits per sector without software intervention. If an error is not corrected via the ECC, the error status is returned to the processor for further recovery routines.

A unique capability of the IDC is its ability to support and control up to four disk drives of different types and capacities. During individual drive or pack formatting, the drive type is determined and identifying flags are written onto that particular disk pack. During system software generation (SYSGEN), the particular disk type that is configured on each controller port is recorded by the system software. The disk type is otherwise totally transparent to the user and system.

Since most of the disk access time is taken up during seeks, system performance can be enhanced by allowing multiple seeks to occur in parallel. The IDC supports and controls all overlapped seeks with minimal software intervention.

The IDC uses a microprocessor-based control system that provides onboard diagnostics which pre-test the controller before the disk subsystem is activated. These diagnostics test all control functions, data paths, and ROM/RAM integrity.

Specifications

Performance

DMA bus transfer rate: Up to 2.6MB/sec aggregate throughput.

Drive input rate: 1.2MB/sec.

Sector buffer size: 512 byte RAM for two logical data buffers.

Compatability

All Perkin-Elmer standard high-speed disk drives (SMD type interface).

Power Requirements

+5 volts at 7 amps.

Environmental

Operating: 0-45°C temperature. 80% non-condensing relative humidity.

Nonoperating: −40° to +65°C 95% non-condensing relative humidity.

Dimensions

381mm x 381mm (15" x 15"). Multiwire circuit board.

Weight

1.4kg. (3 pounds).

Product Number

M46-742 IDC–The Intelligent Disk Controller is a single-board disk interface with a capability of supporting 1 to 4 SMD type disk drives. The IDC has an aggregate throughput rate of 2.6MB per second and has an on-board dual logical sector buffer.

Related Documentation

47-032 Hardware Maintenance Manual.

50-007 Programming Manual.

The information contained herein is intended to be a general description and is subject to change with product enhancement.

PERKIN-ELMER

Data Systems Group
2 Crescent Place
Oceanport, N.J. 07757
(201) 870-4712
(800) 631-2154 (U.S.A. Only)

EVERYWARE™

PB402094
Printed in U.S.A.