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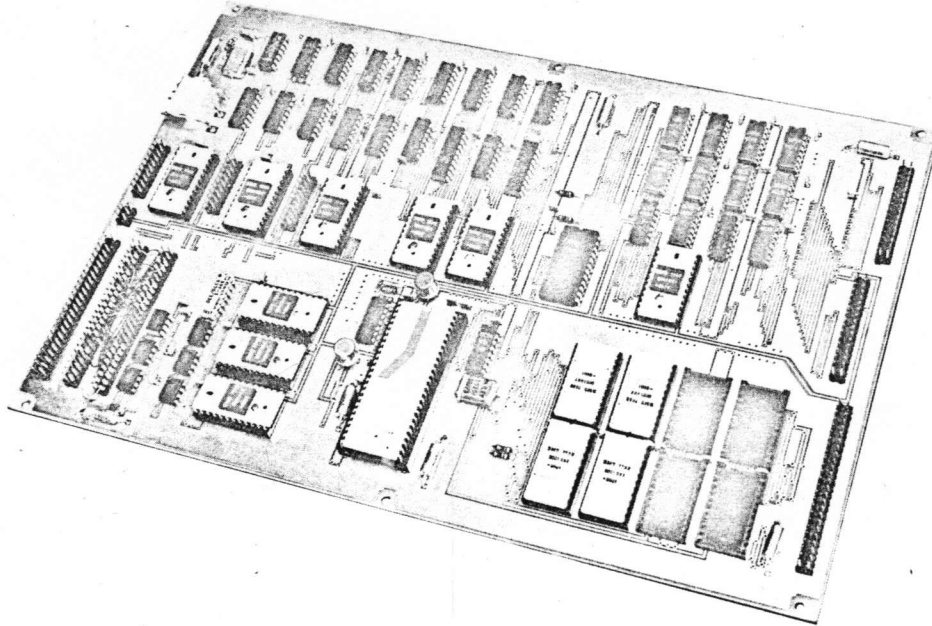
FD0300
FLOPPY DISK CONTROLLER

Direct Interface To:

Orbis 76/77
Shugart 800
Calcomp 140
Pertec 400/500
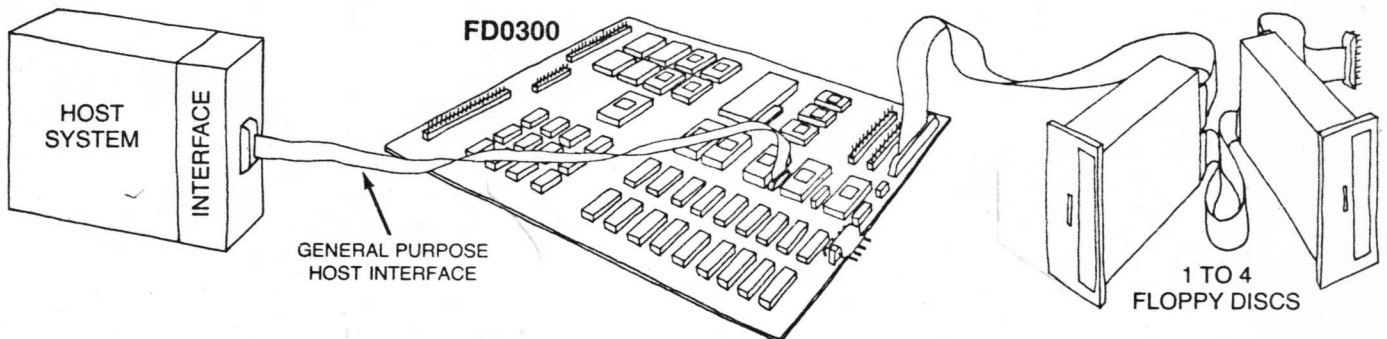**Innovex 210**
GSI 110
CDC 9404

FEATURES

- **Low cost - $320 in quantity 100**
- **Compact - Single 8"x12" PC board**
- **IBM 3740 Format Compatible**
- **Controls up to 4 Drives**
- **Utilizes LSI Bipolar Microprocessor**

- **Requires Only +5 Volt Power Supply**
- **Sector Buffer (128 bytes)**
- **Overlapped Head Seek**
- **Asynchronous TTL Host Interface**
- **Eight Functions - RESET, SEEK, READ, READ ID, WRITE, WRITEDEL, FORMAT, STATUS**

DESCRIPTION

The FD0300 Floppy Disk Controller is a complete preprogrammed controller for IBM compatible disk drives. It performs control functions required to transfer data between 1 to 4 disk drives and a host system. The FD0300 also performs all formatting functions required to read and write data according to IBM 3740 specifications. A direct interface to industry standard floppy disk drives is provided through a 50 pin connector on the FD0300 PC board. A General Purpose Host Interface is also provided for easy interface to host systems such as minicomputer/

microprocessor I/O busses, CRT terminals, instruments, TTL/MSI microprocessors, industrial controllers and other byte oriented systems.

The General Purpose Host Interface interprets commands received from the host system which allow data to be addressed and transferred between the floppy disk drive and host system. The implementation of these macro level commands by the FD0300 minimizes host system interface circuitry and overhead functions.

FD0300

HOST SYSTEM — INTERFACE

GENERAL PURPOSE HOST INTERFACE

1 TO 4 FLOPPY DISCS

Floppy Disk Drive Interface

A 50 pin 3M connector containing all logic signals is provided on the FD0300 PC board for direct connection to most floppy disk drives.
The FD0300 supports from 1 to 4 drives connected `a daisy chain configuration. Floppy disk drive power `d ground connections must be provided separately.

General Purpose Host Interface

The host interface provides 18 TTL signal lines for interface to a host system. The interface consists of 3 I/O ports which provide control, status, and data paths between the host system and the FD0300.

Interface Lines

All interface signals TTL compatible.

Signal	Description
CMD	Input line from host, used to initiate operation.
ACK	Input line from host, used to acknowledge data byte transfer and status reporting.
DATA	Eight bi-directional lines used to transmit commands to the FDC, transfer data between the host and FDC, and report status to the host.
DCTRL	Output line used by FDC to control data direction of DATA.
FDC ON	Output line set by FDC during initialization; a zero on this line indicates FDC is on.
¯RROR	Output line set by FDC to indicate an error; error may be associated with command, disk drive, or disk operation.
STATID	Two output lines set by FDC to identify kind of error or status being reported.
DONE	Output line set by FDC to indicate an operation is complete and that status on the operation is available.
BUSY	Output line set by FDC to indicate an operation is in progress and FDC will not accept new command.
XFR	Output line set by FDC to signal a data byte transfer; signal tells host data byte is available (disk read) or requests data byte from host (disk write).

Host Commands

The FD0300 implements eight basic functions required to address, read, and write data. Each function is initiated by a 2 byte command sent by the host to the FD0300.

Command	Description
RESET	Resets controller and all floppy disks in system.
SEEK	Steps head to specified track.
READ	Reads a sector of data (128 bytes) from specified sector.
READID	Reads the next sector ID information.
WRITE	Writes a sector of data (128 bytes)

with normal Data AM to specified sector.
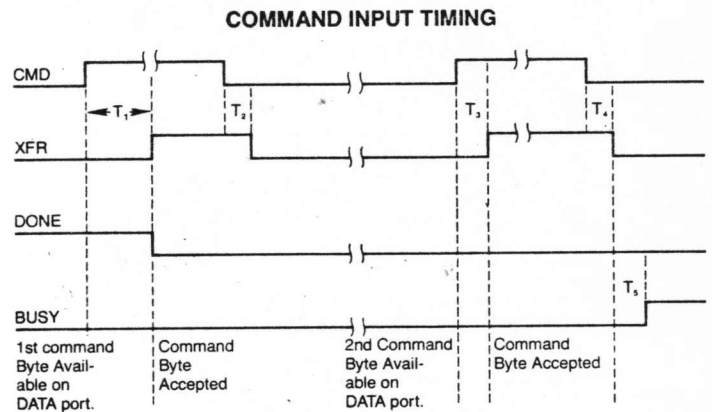
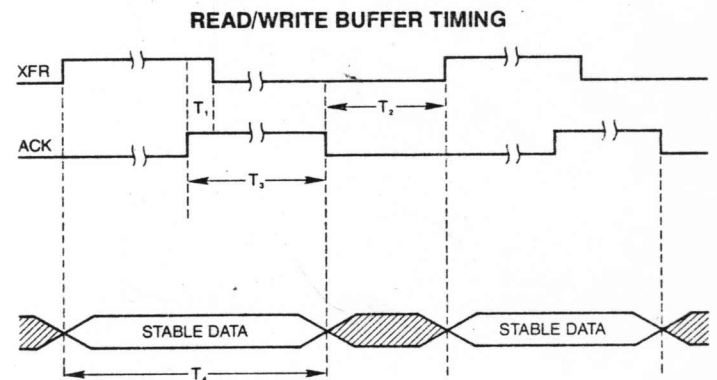|	
WRDEL	Writes a sector of data with Deleted Data AM to specified sector.
FORMAT	Writes address marks, gaps and data on entire track per IBM 3740 format.
STATUS	Returns status for addressed drive.

Data Buffering

The FD0300 contains a 128 byte data sector buffer. The host may specify in a READ, WRITE, or WRDEL that the operation is to be either:

a. Direct data transfer between host and disk.
b. Data transfer between host and buffer.
c. Data transfer between buffer and disk.

Timing (Examples)

COMMAND INPUT TIMING

T_1 = 4 µsec (min) - 60 µsec (max) if overlapped seeks
T_2 = 1 µsec
T_3 = 2 µsec
T_4 = 1 µsec
T_5 = 2.5 µsec

READ/WRITE BUFFER TIMING

T_1 = 2.5 µsec (min)
T_2 = 2.1 µsec
T_3 = .5 µsed (min)
T_4 = Period during which data is available on DATA port or may be placed on Data port - host determined.

Specifications

Mechanical	Single 8"x12" PC board, six mounting holes. Host interface: Three 20 pin 3M connectors (3421-0000).
	Disk drive interface: One 50 pin 3M connector (3425-0000).
Power	3.0 amps (nominal) @ +5 volts. Molex 5 pin connector (09-75-1051).
Environment	0°-50°C system ambient operating temperature.
	10% to 90% relative humidity.

FD0300-56

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PRICE LIST
JULY 1976

FLOPPY DISK CONTROLLERS

PRODUCT	DESCRIPTION	1-14	15-49	50-99	100-499
FD0300 Series	Complete IBM 3740 format compatible floppy disk controller with general purpose host interface. Model No. FD030X*	$640	$480	$400	$320
FD1100 Series	Complete PDP-11 floppy disk controller (IBM 3740 format compatible). Model No. FD110X*	$920	$690	$575	$460
FD0800 Series	Complete PDP-8E floppy disk controller with high density format (384 bytes/ sector, 11 sectors/track). Model No. FD080X-1*	$880	$660	$550	$440

```
*ORDER INFORMATION

The X in the model number should be
replaced by one of the following
digits.

1 - Interface to Orbis 76/77
2 - Interface to Shugart 800
3 - Interface to Pertec 400/500
4 - Interface to Innovex 210
5 - Interface to Calcomp 140
6 - Interface to CDC 9404
```

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

520 Clyde Avenue, Mountain View, California 94043 (415) 964-5700

Terms and Conditions

1. Quantity discounts apply to units purchased by same customer over a period not to exceed twelve months.

2. A minimum of thirty percent (30%) of the units ordered must be scheduled for delivery at time of order placement.

3. Buyer may upon thirty (30) days written notice to Seller reschedule any units scheduled for shipment during the next ninety (90) days. Any unit(s) may be rescheduled only once.

4. Provided that at least thirty percent (30%) of the total units ordered have been purchased and paid for by Buyer during the first twelve (12) months of the order, Buyer shall have the right to cancel the balance of the units on the order, but only upon the payment to SMS of that amount which equals the number of units paid for by Buyer multiplied by the appropriate quantity price (see pricing schedule), less the total dollar amount actually paid to SMS by Buyer for such quantity of units, plus ten percent (10%) of the net difference.

5. Quantity discounts on additional orders will be based on accumulated orders on the date of order increase. Quantity discounts on previous shipments will not be affected.

6. Prompt payment discount 1% — 15 days.

7. Net 30 days, F.O.B., Mountain View, California.

8. Prices are exclusive of any taxes. Such taxes when applicable will appear as separate items.

Warranty

SMS warrants all of its products against defective workmanship, performance, and construction. SMS, at its option, will repair or replace parts of its own manufacture which are determined to be defective within one year from date of shipment provided they are returned to an authorized SMS service center. This warranty does not apply to any SMS products that in SMS' judgment have been subject to misuse, neglect, accident or improper installation, application or operation or to any products that have been repaired or altered by other than authorized SMS personnel. SMS is not liable for consequential damages. No other warranty is expressed or implied.

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