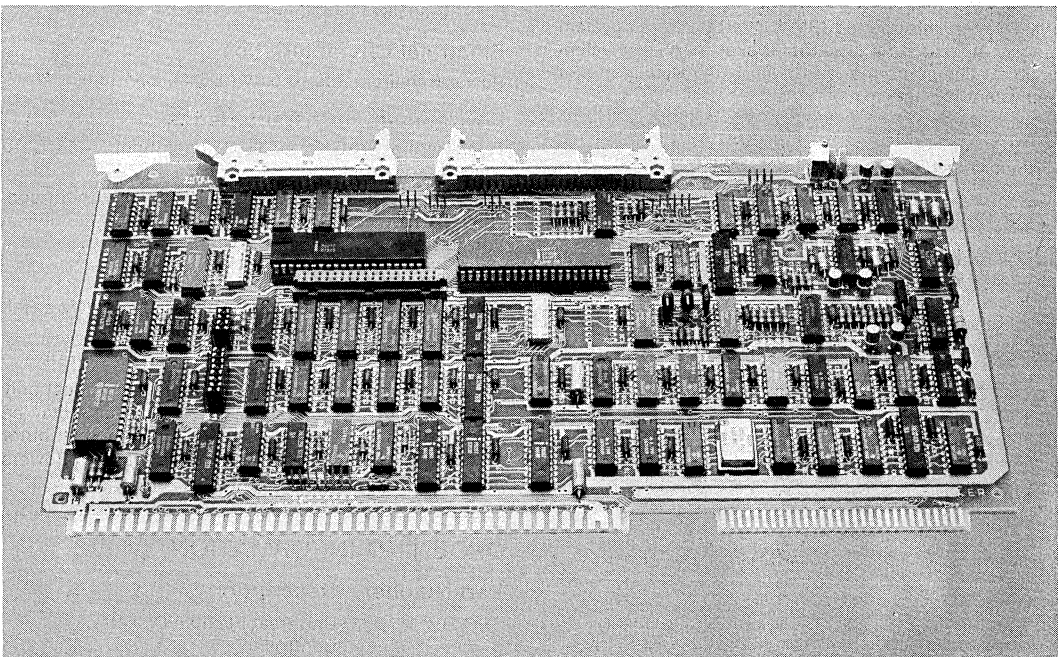




## iSBC 208 FLEXIBLE DISK CONTROLLER

- Compatible with all iSBC 80, iSBC 86, and iSBC 88 Single Board Computers
- Controls most single and double density diskette drives
- On-board iSBX bus for additional functions
- User-programmable drive parameters allow wide choice of drives
- Phase lock loop data separator assures maximum data integrity
- Read and write on single or multiple sectors
- Single +5V Supply
- Capable of addressing 16M bytes of system memory

The Intel iSBC 208 Flexible Disk Controller is a diskette controller capable of supporting virtually any soft-sectored, double density or single density diskette drive. The standard controller can control up to four drives with up to eight surfaces. In addition to the standard IBM 3740 formats and IBM System 34 formats, the controller supports sector lengths of up to 8192 bytes. The iSBC 208 board's wide range of drive compatibility is achieved without compromising performance. The operating characteristics are specified under user program control. The controller can read, write, verify, and search either single or multiple sectors. Additional capability such as parallel or serial I/O or special math functions can be placed on the iSBC 208 board by utilizing the iSBX bus connection.



# iSBC 208

## FUNCTIONAL DESCRIPTION

Intel's 8272 Floppy Disk Controller (FDC) circuit is the heart of the iSBC 208 Controller. On-board data separation logic performs standard MFM (double density) and FM (single density) encoding and decoding, eliminating the need for external separation circuitry at the drive. Data transfers between the controller and memory are managed by a DMA device which completely controls transfers over the MULTIBUS system bus. A block diagram of the iSBC 208 Controller is shown in Figure 1.

## Universal Drives and the iSBC 208 Controller

Because the iSBC 208 Controller has universal drive compatibility, it can be used to control virtually any standard- or mini-sized diskette drive. Moreover, the iSBC 208 Controller fully supports the ISBX bus and can be used with any ISBX module compatible with this bus. Because the iSBC 208 Controller is programmable, its performance is not compromised by its universal drive compatibility. The track-to-track access, head-load, and head-unload characteristics of the selected drive model are program specified. Data may be organized in sectors up to 8192 bytes in length.

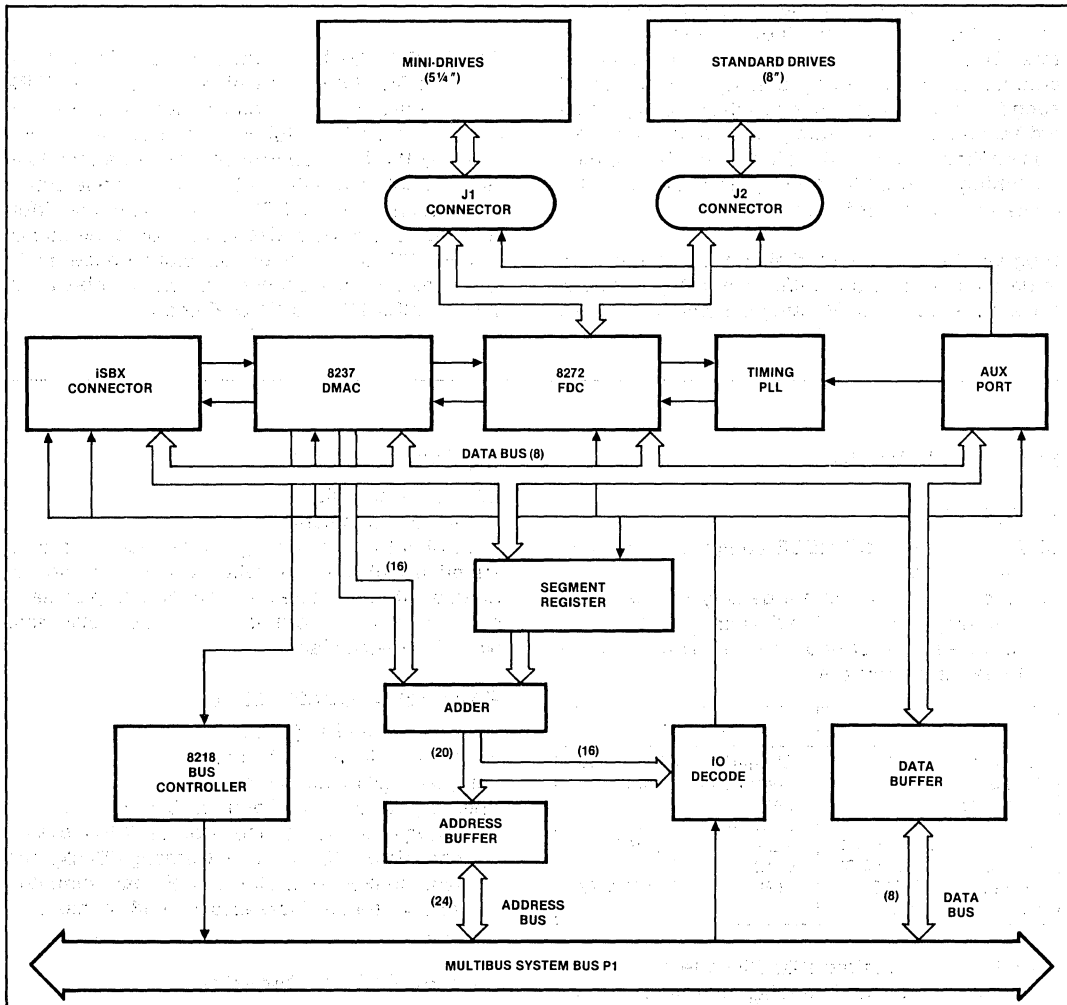


Figure 1. iSBC 208 Flexible Disk Controller Block Diagram

**Interface Characteristics**

The standard ISBC 208 Controller includes an Intel 8272 Floppy Disk Controller chip which supports up to four drives, single or double sided.

**SIMPLIFIED INTERFACE**—The cables between the ISBC 208 Controller and the drive(s) may be low cost, flat ribbon cable with mass termination connectors. The mechanical interface to the board is a right-angle header with locking tabs for security of connection.

**PROGRAMMING** — The powerful 8272 FDC circuit is capable of executing high-level commands that simplify system software development. The device can read and write both single and multiple sectors. CRC characters are generated and checked automatically. Recording density is selected at each Read and Write to support the industry standard technique of recording basic media information on Track 0 of Side 0 in single density, and then switching to double density (if necessary) for operations on other tracks.

**Program Initiation**—All diskette operations are initiated by standard input/output (I/O) port operations through an ISBC single board computer.

System software first initializes the controller with the operating characteristics of the selected drive. The diskette is then formatted under program control. For subsequent transfers, the starting memory address and transfer mode are specified for the DMA controller. Data transfers occur in response to commands output by the CPU.

**Data Transfer**—Once a diskette transfer operation has been initiated, the controller acts as a bus master and transfers data over the MULTIBUS at high speed. No CPU intervention is required until the transfer is complete as indicated either by the generation of an interrupt on the bus or by examination of a "done" bit by the CPU.

**ISBX BUS SUPPORT** — One connector is available on the ISBC 208 board which supports the ISBX system bus. This connector supports single-byte transfer as well as higher-speed transfers supervised by the DMA controller. Transfers may take place in polled or interrupt modes, user-selected. The presence of the ISBX bus allows many different functions to be added to the board. Serial I/O, parallel I/O and various special-purpose math functions are only a few of the capabilities available on ISBX MULTIMODULE boards.

**SPECIFICATIONS**

**Compatibility**

**CPU**—Any ISBC MULTIBUS computer or system main frame

**Devices**—Double or single density standard (8") and mini (5¼") flexible disk drives. The drives may be single or double sided. Drives known to be compatible are:

Standard (8")		Mini (5¼")	
Caldisk	143M	Shugart	450 SA 400
Remex	RFD 4000	Micropolis	1015-IV
Memorex	550	Pertec	250
MFE	700	Siemens	200-5
Siemens	FDD 200-8	Tandon	TM-100
Shugart	SA 850/800	CDC	9409
Pertec	FD 650	MPI	51/52/91/92
CDC	9406-3		

**Diskette**—Unformatted IBM Diskette 1 (or equivalent single-sided media); unformatted IBM Diskette 2D (or equivalent double-sided).

**Equipment Supplied**

ISBC 208 Controller  
 Reference Schematic  
 Controller-to-drive cabling and connectors are not supplied with the controller. Cables can be fabricated with flat cable and commercially-available connectors as described in the ISBC 208 Hardware Reference Manual

**Physical Characteristics**

**Width**—6.75 inches (17.15 cm)  
**Height**—0.5 inches (1.27 cm)  
**Length**—12.0 inches (30.48 cm)  
**Shipping Weight**—1.75 pounds (0.80 Kg)  
**Mounting**—Occupies one slot of ISBC system chassis or ISBC 604/614 Cardcage/Backplane. With an ISBX MULTIMODULE board mounted, vertical height increases to 1.13 inches (2.87 cm).

**Electrical Characteristics**

**Power Requirements**— +5 VDC @ 3.0A

# iSBC 208

## Data Organization and Capacity

### Standard Size Drives

	Double Density						Single Density					
	IBM System 34			Non-IBM			IBM System 3740			Non-IBM		
Bytes per Sector	256	512	1024	2048	4096	8192	128	256	512	1024	2048	4096
Sectors per Track	26	15	8	4	2	1	26	15	8	4	2	1
Tracks per Diskette	77			256			77			256		
Bytes per Diskette (Formatted, per diskette surface)	512,512 (256 bytes/sector) 591,360 (512 bytes/sector) 630,784 (1024 bytes/sector)			630,784			256,256 (128 byte/sector) 295,680 (256 bytes/sector) 315,392 (512 bytes/sector)			315,392		

## Drive Characteristics

	Standard Size	Mini Size
	Double/Single Density	Double/Single Density
Transfer Rate (K bytes/sec)	62.5/31.25	31.25/15.63
Disk Speed (RPM)	360	300
Step Rate Time (Programmable)	1 to 16 msec/track in 1 msec increments	2 to 32 msec/track in 2 msec increments
Head Load Time (Programmable)	2 to 254 msec in 2 msec increments	4 to 508 msec in 4 msec increments
Head Unload Time (Programmable)	16 to 240 msec in 16 msec increments	32 to 480 msec in 32 msec increments

## Environmental Characteristics

**Temperature**—0°C to 55°C (operating); -55°C to +85°C (non-operating)

**Humidity**—Up to 90% Relative Humidity without condensation (operating); all conditions without condensation or frost (non-operating)

## Reference Manual

**143078-001**—iSBC 208 Flexible Disk Controller Hardware Reference Manual (NOT SUPPLIED). Reference manuals may be ordered from any Intel sales representative, distributor office, or from Intel Literature Department, 3065 Bowers Avenue, Santa Clara, CA 95051.

## ORDERING INFORMATION

Part Number	Description
SBC 208	Flexible Disk Controller