SYKES

**Dual density and
IBM compatible
flexible disk systems**
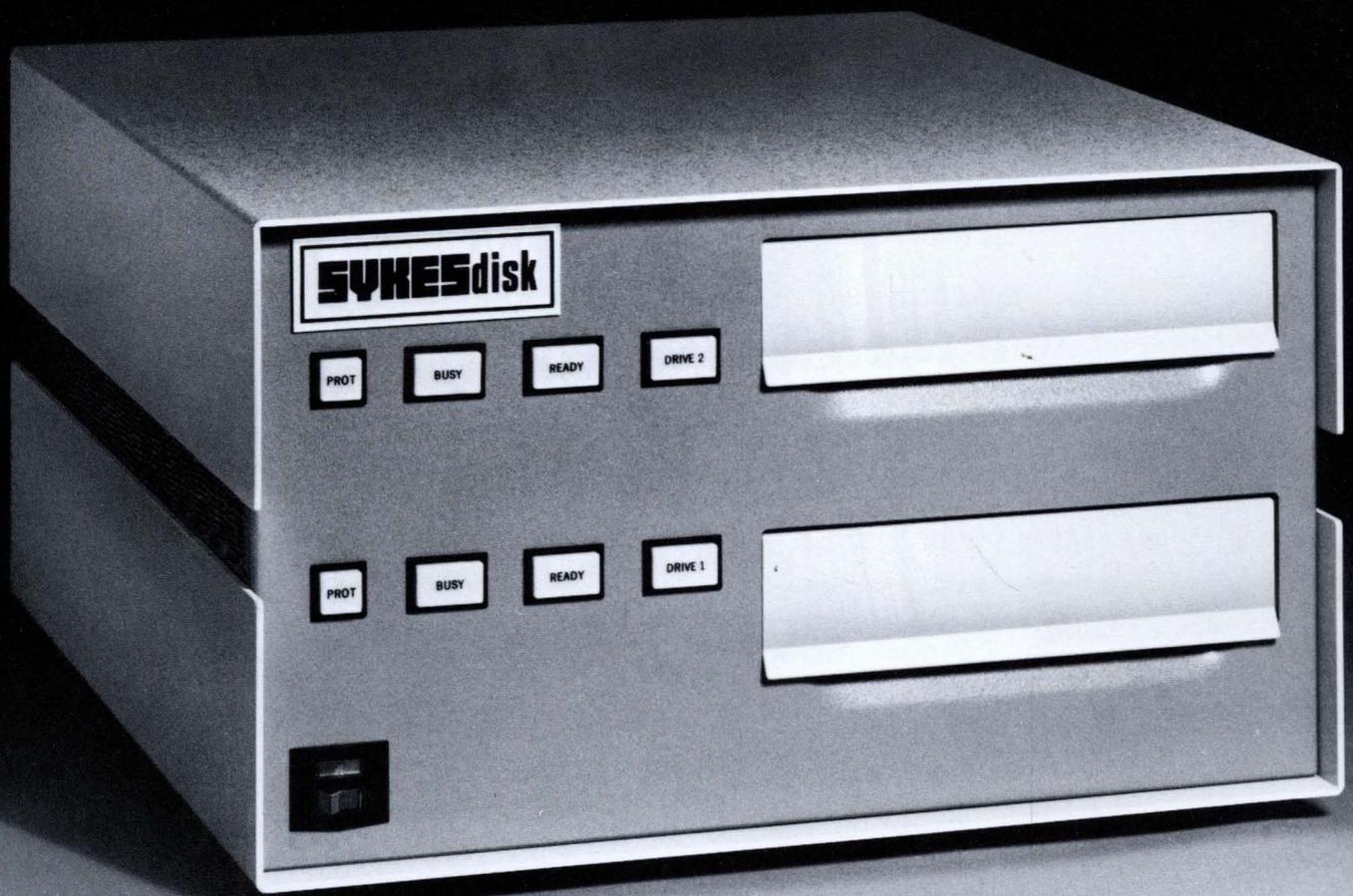
the system

Sykes Series 7000 and 9000 Flexible Disk Systems offer the user a choice of IBM compatible or dual density recording, off-the-shelf interfaces, extensive software support, and a variety of options. A unique intelligent controller provides hardware for those functions normally performed in software, making your software simpler and saving you time and money in developing, documenting, and maintaining your system.

IBM System Performance Series 7000 IBM compatible systems record and read diskettes which are interchangeable at all levels with the IBM 3740 system. The diskette format conforms precisely to the IBM standard; 77 tracks with 26 sectors per track and 128 bytes per sector.

Several of the unique features are:
- Auto record blocking—blocks data strings of any length into 128 btye sectors. Sector and track sequencing is handled by hardware.
- Automatic generation and check of IBM sync and CRC characters.
- 256 btye FIFO buffer for asynchronous operation.
- Detects and stores deleted records.

Dual Density System Performance The Series 9000 Dual Density System uses either IBM type diskettes or a modified IBM diskette which contains sector holes with the same radius as the index hole. The Diskette format is 77 tracks with 32 sectors per track and 256 bytes per sector.

Unique features include:
- Auto Record Blocking—blocks data strings of any length into ~~128~~ 256 btye sectors. Sector and track sequencing is handled by hardware.
- Automatic generation and check of ~~IBM~~ sync and CRC characters.
- 256 btye FIFO buffer for asynchronous operation.
- ~~Detects and stores deleted records.~~

Features common to both systems:
- Automatic Track and Sector Search—Disk searches completely performed by controller, not by software.
- Automatic Address Verification prior to reading or writing every sector.
- Automatic Head Unload when not transferring data.
- During a WRITE operation, partial sectors are automatically filled with zero characters by the hardware.

Reliability features:
- System design life: 10 years.
- Ceramic head for long life and minimum diskette wear.
- Automatic head unloading when not reading or writing.
- Error Rate: Typically 4.2×10^{10} bits per soft error.

advantages

Advantages of Sykes Flexible Disk Controller The Sykes Flexible Disk Controller is designed to reduce software complexity and eliminate the possibility of timing errors and data overruns during disk transfers. Some of the key features which accomplish this are as follows:

1. Automatic Record Searching The Controller automatically searches out the track/sector address. The programmer is only required to output a track number (zero to 76) and sector address (1 to 26, 32 or 40 depending on configuration) of the first sector of data to be read or written. The programmer is never required to step in or step out track by track or to count sectors. When the controller finds the desired address, a flag is set indicating that it is ready to transfer data. Illegal addresses (example: sector 50) that cannot be found result in a Fault Status condition.

2. Automatic Generation of Sync Byte and CRC Handling The Sykes Controller automatically performs the following operations when reading or writing data:
• Senses the address "sync byte" preceding each sector.
• Reads the sector address, calculates the CRC value and verifies it with the recorded CRC bytes.
• If writing, then writes either a standard data sync byte or a "delete record" data sync byte (programmer's option on Series 7000 only).
• Calculates the CRC value while reading or writing the data.
• Writes the data CRC bytes or reads and verifies the data CRC bytes.

3. Automatic Record Blocking The Sykes Controllers will automatically block the data that is output by the CPU into sectors of 128/256 bytes. Partial sectors are automatically filled with zeros. Therefore, to write 1,000 bytes, the programmer merely issues the track/sector address, transfers 1,000 bytes of data and issues a TERMINATE command. The controller will block the data into sectors and write them beginning with the selected address. When transferring data to or from a disk, the next sequential sector (and track as required) is automatically accessed until the CPU issues a TERMINATE command. It is therefore possible to contiguously read or write the entire disk having issued only one track and sector address.

4. Automatic Head Load/Unload Head Loading and Unloading are handled entirely by the Controller. The Head contacts the disk surface whenever a READ or WRITE is to be performed and is automatically unloaded if data is not transferred within a reasonable time span. This assures minimum wear to the head and the disk. At the programmer's option, a command can be issued which will cause the head to unload immediately.

5. FIFO Buffer Both systems feature a 256 byte FIFO Buffer.* This approach removes the stringent timing restrictions normally associated with disk systems and allows asynchronous operation down to DC. The use of a buffer allows the unit to operate at any priority level, never requiring exclusive access to the CPU during data transfer. It is impossible to have an overrun, timing error or data service error with this powerful feature. The "fall through" feature of the FIFO Buffer also makes it possible to transfer one track of data in a single revolution if desired.

*Included on single-board controller, optionally available with card cage version.

options

The Sykes Series 7000 and 9000 Flexible Disk Systems are supported by a wide variety of available options including:
• Single or Dual Drive configuration
• Off-the-shelf hardware interfaces
• Software drivers
• Packaging options
• Power supply options

The Series 7000 System is the IBM compatible version available as either Model 7150 (single drive) or Model 7250 (dual drive). Models 9150 and 9250 are single and dual drive versions of the Dual Density system.

Hardware interfaces and software drivers are available for use with the following minicomputers:

DEC	NOVA AND DCC EQUIVALENT	VARIAN	H.P.	INTERDATA
RT-11	SDOS	VORTEX I, II	DOS III	OS/16-MT2
OS/8		E-BASIC	RTE-II, III	OS/32
4K Disk Monitor		MOS	MTS	DOS
			BCS	

Other interfaces and software drivers are also available: Consult the factory on your particular application.

For microprocessors and other customer applications, an 8-Bit Bi-Directional Parallel Interface is available. This interface is particularly well suited to microprocessor applications since it features eight bi-directional data lines and five control signals, all TTL compatible with line drivers. The 8-bit buss may contain input data, output data, command or status information. Two control lines determine the type of information and direction of transfer. A data service flag and strobe line provide proper timing of the data transfer. A hardware reset line is automatically pulsed at power up and may be optionally used to clear the controller at any time.

Universal Breadboard Interface Kit The Universal Breadboard Interface Kit consists of a wirewrap board which can accommodate twenty-seven 16 pin integrated circuits for development purposes.

Other Options
1. Both units are available either in tabletop or rack mount versions. The tabletop package is designated 7000/9000S and may be used either as a stand alone unit or rack mounted using the optional rack mount kit. All configurations, IBM or dual density, single or dual drive, are available in this package. The 7000/9000L designation indicates the low profile rack mount version. Series 9000 system is available only with a dual drive in this package.

2. Both systems are available with optional 50 HZ 220 volt operation.

specifications

Equipment Configurations	Single Drive	Dual Drive
Series 7000 IBM Compatible Systems	7150 S or L package	7250 S or L package
Series 9000 Dual Density Systems	9150 S package only	9250 S or L package

Performance Specifications	IBM Compatible System	Dual Density System
Disk Format	77 tracks x 26 sectors	77 tracks x 32 sectors*
Sector Length	128 bytes/sector	256 bytes/sector*
Disk Capacity	256, 256 bytes	630, 784 bytes*
Transfer Rate	31.25K bytes/sec/sector 20K bytes/sec/track	62.6K bytes/sec/sector 49K bytes/sec/track
Av. Access Time	300 milli-sec.	300 milli-sec.
Latency Time	83 milli-sec.	83 milli-sec.
Track-to-Track Stepping	6 milli-sec.	6 milli-sec.
Head Settling Time	30 milli-sec. max.	30 milli-sec. max.
Rotational Speed	360 RPM	360 RPM
Recording Technique	Double Frequency	Miller Encoding
Head	Ceramic	Ceramic

*When used with PDP-8 family, optional format is 77 tracks, 40 sectors/track, 256 6-bit bytes/sector.

Physical Specifications		
Model	7000/9000S	7000/9000L
Mounting	Rack mount Tabletop	Rack mount
Size	9.7" H x 16.8" W x 19.12" D	5.25" H x 17" W x 26" D—single (7000 only) 10.5" H x 17" W x 26" D—dual
Weight	45 lbs.—single 61 lbs.—dual	55 lbs.—single 75 lbs.—dual

Environmental Specifications	
Temperature	60° F to 100° F
Relative Humidity	20% to 80% non-condensing

Power Requirements	Standard	Optional
	117 VAC ± 10% 60 HZ ± 0.5 HZ	220 VAC ± 10% 50 HZ ± 0.42 HZ

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