THE PERTEC FAMILY OF FLEXIBLE DISK DRIVES: THE KIND OF DRIVES AN OEM WOULD DESIGN HIMSELF

THE PERTEC FLEXIBLE DISK DRIVE FAMILY

THE KIND OF DRIVES AN OEM WOULD DESIGN

Wide applications, products that simplify your design time, reliability that begins before you buy are just a few of the needs of most OEMs.

It took the world's largest independent manufacturer of multiple peripheral devices to combine the inherent benefits of flexible disk with an experienced knowledge of OEM needs. The result: a unique, unmatched product family — the Pertec family of flexible disk drives. The most versatile, compact, and reliable disk drives in the world.

- **Storage Capacities:** 6.4 million bits (unformatted with FD410, FD510, FD511A and FD514); 3.2 million bits (unformatted with all models); IBM format (256,256 bytes all models).
- **Ferrite Read/Write Heads:** *totally* IBM compatible; 20,000 hour head life; 5 million passes on a single track.
- **Superior Track Positioning Accuracy:** positioner uses 3-step movement track-to-track.
- **Unique Retractable Head System with Pad:** contacts media *only* when reading or writing data.
- **Choice of AC or DC Motors:** lowest power consumption of any IBM compatible flexible disk drive.
- **Precision Steel Chassis:** temperature compensation of steel provides greater track accuracy.
- **Smallest Available IBM Compatible Models:** compact units fit horizontally (2) or vertically (4) in standard racks.
- **MTBF:** exceeds 10,000 power-on hours.
- **Two-State Positive Latching Door:** provides operator convenience for removal and replacement of diskette.
- **Optional Interface Adapters.**

Compact size makes easy incorporation into your system. Each model of Pertec's flexible disk drives is only 87.6 mm x 218.4 mm x 378.5 mm (3.45" x 8.6" x 14.9"). You can mount two units horizontally or four units vertically in a standard EIA enclosure.

The FD410 provides you with a DC motor in a compact chassis. The FD5X0, FD511A and FD514 provide double density capability, a two-state positive latching door and a small AC motor, with the same compact chassis size as the FD410. All models provide you with the benefits of flexible disk and Pertec's experience in designing peripheral equipment for the OEM.

Storage Capacities. Up to 6.4 million bits (unformatted) of information may be reliably stored and retrieved on the FD410, FD510, FD511A, and FD514. All models have standard storage capacities of 3.2 million bits (unformatted). In IBM format, the flexible disk cartridge—diskette—stores 256,256 bytes or 2002 128-byte records.

By abandoning the IBM format, you can double the data density using the optional capabilities of the FD410, FD510, and FD511A.

Ferrite Heads Mean Longer Head/Media Life. All Pertec flexible disk drives incorporate ferrite read/write heads. Ferrite heads yield a head life of 20,000 hours. And, because there's no foreign particle embedment in a ferrite head, your media life is extended to 5 million passes on a single track.

Exclusive Retractable Head Extends Media Life. Pertec's unique, exclusive head retract system allows both the head and pad to be in contact with the diskette *only* when actually reading or writing. When loading or unloading, the medium is never touched by the head assembly. This means less chance for data deterioration plus a longer media life. A real customer benefit in selling your system.

You Choose: AC or DC. Now you have a choice. In the FD410 the DC motor, with a belt drive spindle, gives you control over speed while allowing you to market your system internationally without concern about changing power requirements.

Or choose the FD5X0 or FD511A. The same small size chassis with an AC motor. And it has the voltage ranges to eliminate any concern over transformer taps.

Each model consumes less power than any other available flexible disk drive.

Pertec Provides a Steel Chassis for Exceptional Temperature Compensation. So you'll get higher data reliability. The basic chassis centers around a precision stamped steel plate which provides a single reference surface to which all critical mechanical components are attached. The steel material provides an optimum overall temperature compensation which ensures increased track location accuracy.

High Accuracy Track Seeking. A 3-phase stepper motor/lead screw assembly and associated electronics moves the head position from track to track. The result is a 3-steps-per-track linear movement, rather than the typical 1-step-per-track. Thus, you'll receive superior track locating accuracy and the reduced system friction that causes hysteresis error.

Optional Interfaces. We'll even supply you with optional interfaces allowing you to replace other manufacturers' units with the Pertec FD410 or FD5X0. We want you to enjoy the added benefits of Pertec flexible disk drives even though you may have previously chosen other units.

In addition, we offer the model FD514 that shares an interface similar to that of another manufacturer.

INTERFACE DESCRIPTION: FD410, FD5X0, FD511A

Input Control Lines

Step In and Step Out. The head is displaced one track increment for each pulse received. A pulse on the *Step In* line moves the head to a higher order track (toward the center of the disk). A *Step Out* pulse moves the head to a lower order track. Both lines are to be held false when no head movement is desired.

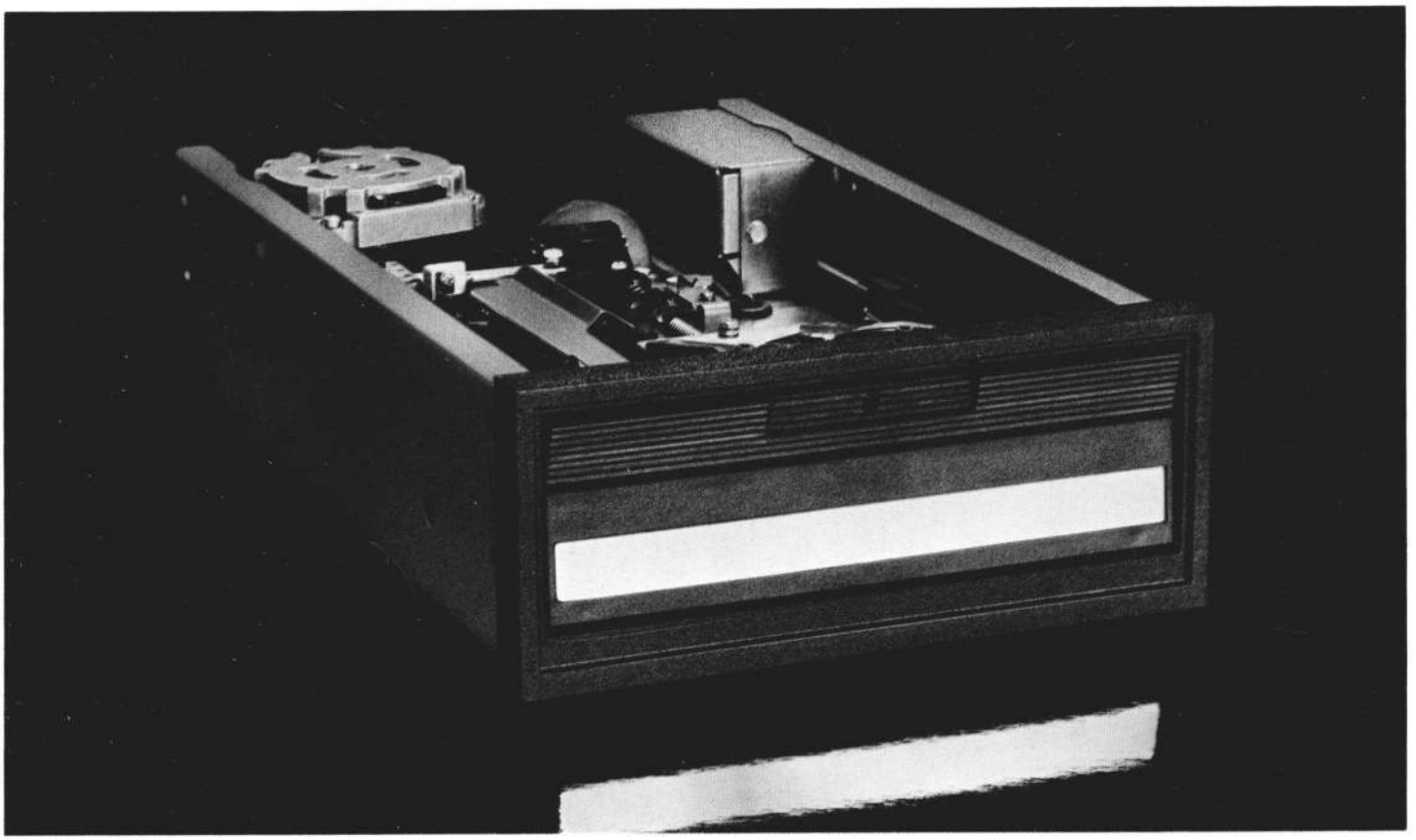
Drive Motor On. The disk drive motor starts and continues to run as long as this line is held true. (FD410 only.)

Head Load. The head load solenoid energizes and remains energized as long as this line is held true.

Head Current Switch. This provides a resolution balance between high and low order tracks to ensure IBM compatibility.

Write Enable. This line enables the write current driver to respond to input write data. *Write Enable* must be true only during the writing period to prevent the loss of pre-recorded data.

External Trim Erase (user option). This line provides independent control of the data track trim erase. When low, this line allows erase current to flow in the erase head.



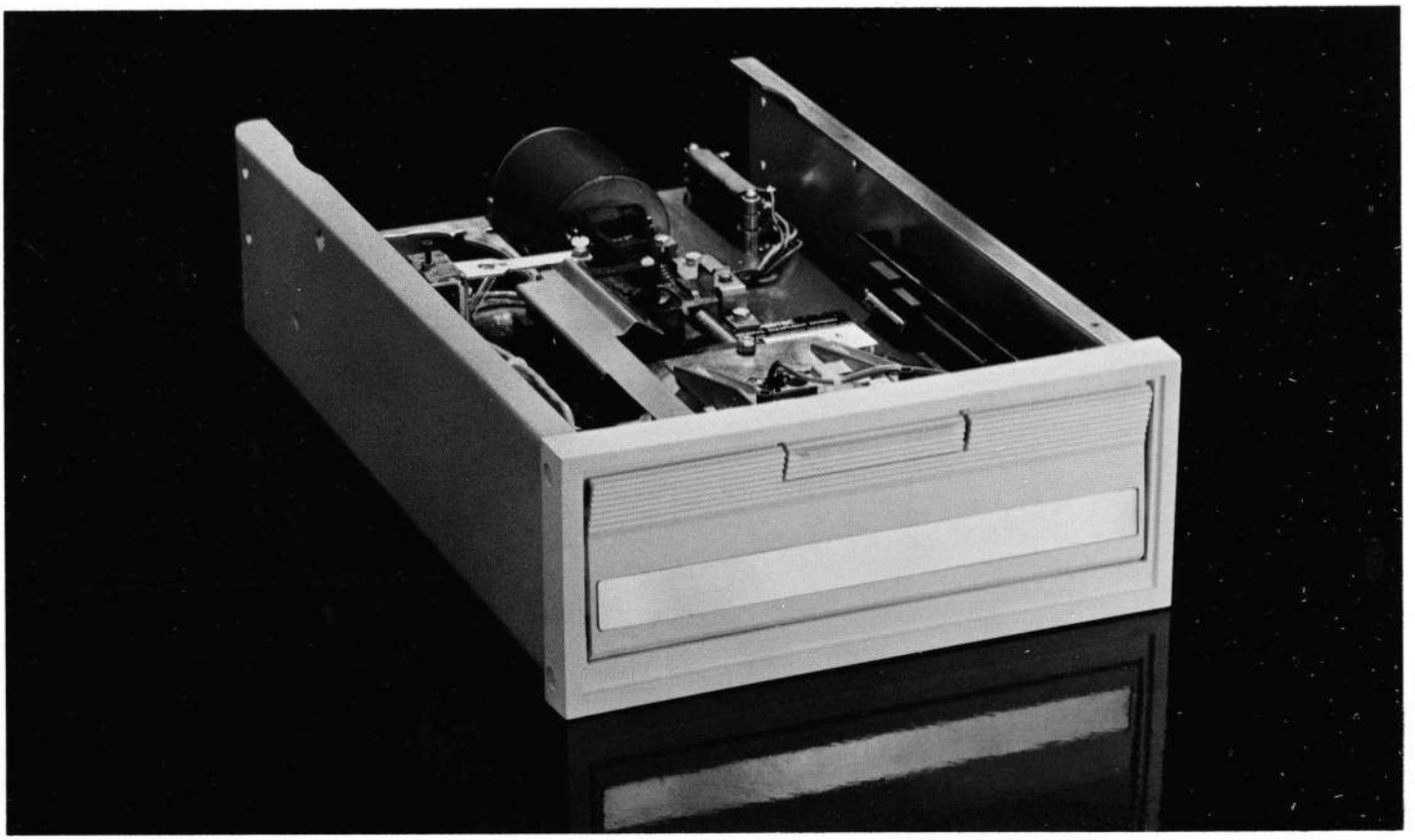
PERTEC FD5X0 FLEXIBLE DISK DRIVE

STANDARD FEATURES

- AC Spindle Drive: Available at 50 or 60 Hz at standard international or domestic voltages.
- Single Density: Standard density is 3268 bpi at the inside track. Optional single/double density 3268/6536 bpi version is available.
- Hard/Soft Sectoring: With a compatible index sector sensor for both hard and soft sectoring.
- Two-State Positive Latching Door with LED Indicator: Provides visual indication of drive select status when interface is active.
- Internal Trim Erase Timing: No need for a customer to concern himself with special timing for external control.
- Power Interrupt: Power supplies are voltage sensed to prevent glitching of diskette thus providing you with more reliable data processing.
- 44 Pin PC Edge Connector.
- Black Trim: Standard on FD5X0.

OPTIONAL FEATURES

- Double Density: The FD5X0 can be specified for double density operation.
- Write Protect: The FD5X0 cannot write when the write protect hole on the diskette is detected.
- —12V/—15V Negative Supply: The user can change from standard —5V to —12V/—15V by a simple jumper change.
- External Erase Timing: For those customers who prefer external trim erase timing to internal timing, the user can switch by simply making a jumper change.
- Power Save: Low power in the head unload or unit not selected mode can be added by the customer.



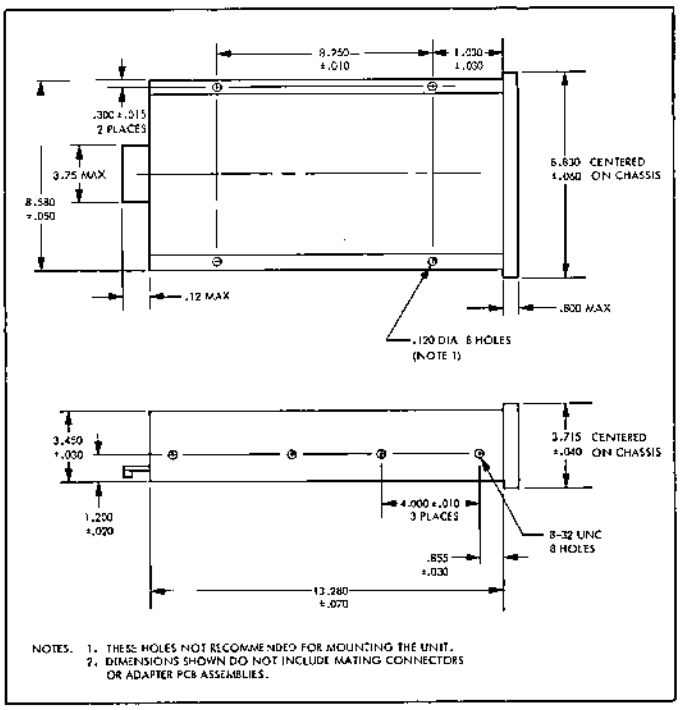
PERTEC FD410: FLEXIBLE DISK DRIVE

STANDARD FEATURES

- DC Spindle Drive: No need for a customer to concern himself with international power requirements.
- Single Density: 3268 bpi inside track, 3.2 million bits unformatted or 256,256 bytes in IBM format.
- Double Density: Capable of 6536 bpi inside track, 6.4 million bits unformatted.
- Hard/Soft Sectoring: With a compatible index sensor for both hard and soft sectoring.
- Two-State Positive Latching Door: Provides operator convenience for removal and replacement of diskette.
- Internal Trim Erase Timing: No need for customer to concern himself with special timing for external control.
- Power Interrupt: Power supplies are voltage sensed to prevent glitching of diskette to provide you with more reliable data processing.
- 44 Pin PC Edge Connector.
- White Trim: Standard on FD410.

OPTIONAL FEATURES

- Write Protect: The FD410 cannot write when the write protect hole on the diskette is detected.
- —12V/—15V Negative Supply: The user can change from standard —5V to —12V/—15V by a simple jumper change.
- Power Save: Low power in the head unload mode can be added by the customer.



Output Status Lines
Track 0. The level on this line is true when the head is positioned at track 0. It goes true approximately 20 milliseconds after the last *Step Out* command.

Index. The pulse on this line indicates that the index hole has been detected. The duration of the pulse is a function of the disk index hole size for FD410 and FD5X0 models.

Door Open. This line is true when the drive door is open (all models except FD511A and FD514).

Write Protect. This line is true when the diskette is write protected.

Write Busy. This line is true when *Write Enable* is true and terminates when the internal trim erase is turned off.

Data Lines
Write Data Input. Serial data in double frequency mode is applied to this line for file writing in conjunction with the activation of *Write Enable*.

Read Data Output. This line is not gated separately in the drive electronics. The read data cell is nominally 4 microseconds. The clock and data pulse widths are 200 ± 50 nanoseconds for double frequency encoding.

THE FD511A OFFERS THESE ADDITIONAL INTERFACE LINES

Input Control Lines
Select (0—3). When true, these lines select the drive in a daisy chain environment. Selection is made via on board switches.

Head Load Enable (0—3). When true, these lines load the head and pad prior to writing. These lines are not gated with Select. Optional switches are available.

Output Status Lines
Selected And Ready. When true, this line indicates that a diskette is inserted, the door is closed, the drive is up to speed and the unit can receive a write or read command.

Selectable Index/Sector Separation Circits. When true, this line indicates that a sector hole has been detected.

Read Data Separator (Double Frequency)
Read Data (applicable on single density only). When true, (pulse), this line indicates that a "logic one" is present.

Read Clock (separated clock applicable on single density only). When true (pulse), this line defines the beginning of a bit cell.

THE FD514 OFFERS AN INTERFACE SIMILAR TO SHUGART SA800/SA801

Input Control Lines
Direction/Step Control. The direction of positioner motion is controlled by the "DIRECTION LINE" and initiated by the "STEP" line.

Select (0—3). When true, these lines select the drive in a daisy chain environment. Selection is made via on board switches.

Output Status Lines
Selected And Ready. When true, this line indicates that a diskette is inserted, the door is closed, the drive is up to speed and the unit can receive a write or read command.

We've earned a good reputation with OEMs; We simplify your job.
Pertec understands volume production and we're sophisticated in our approach to OEM needs. After all, we have more than 80,000 tape transports, disk drives and flexible disk drives in operation throughout the world.

To assist you in your systems design, we provide comprehensive support documentation and application information for our flexible disk drives.

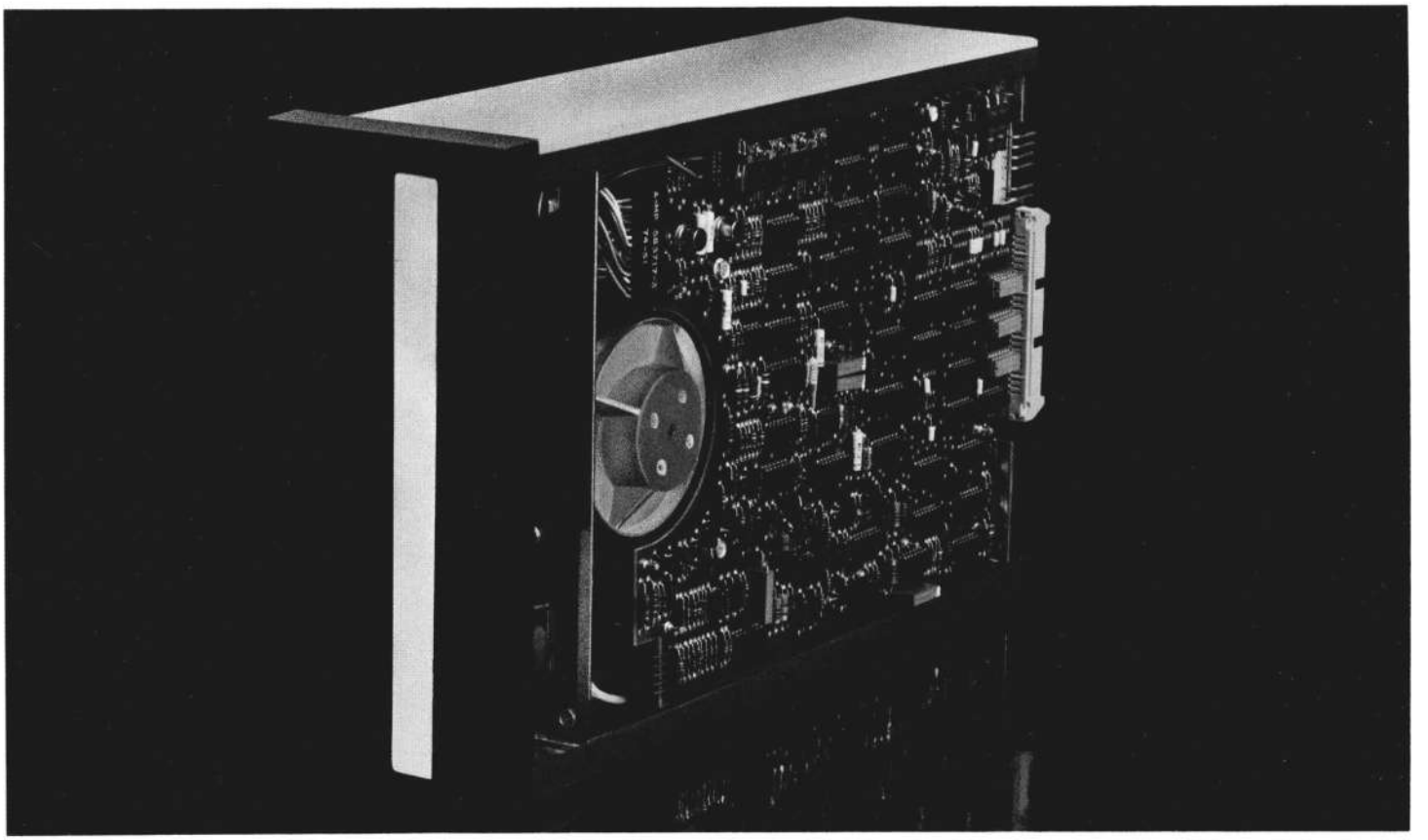
We're counting on our flexible disk drives to make our good reputation with OEMs even better.

Increase your sales and profits by building the Pertec Flexible Disk Drives into your next system.
Compare our FD410 and FD5X0 flexible disk drives with the others—we're confident about your decision.

Regardless of your application, you'll find that the features, specifications and benefits of Pertec's flexible disk drives offer you the best selection for your system requirements.

Call the Pertec sales engineer in your area today. He's qualified to assist you in your selection of peripherals. He can also provide you with Application Notes detailing the sector formats for our flexible disk drives. Or write PCC Pertec, 9600 Irondale Avenue, Chatsworth, CA 91311. For immediate assistance, call (213) 999-2020.

Please refer to the following pages for individual features and options of the FD410, FD5X0, FD511A, and FD514 models.



PERTEC FD511A AND FD514 FLEXIBLE DISK DRIVES

STANDARD FEATURES

- AC Spindle Drive; Available at 50 or 60 Hz at standard international or domestic voltages.
- Single/Double Density: Inherent in the FD511 and FD514 is the ability to provide either 3268 or 6536 bpi at the inner inner track.
- Hard/Soft Sectoring: With a compatible index sector sensor for both hard and soft sectoring, logic separation switch selectable.
- Two-State Positive Latching Door with LED Indicator: Provides visual indication of drive select status when interface is active.
- Internal Trim Erase Timing: No need for the customer to concern himself with special timing for external control.
- Power Interrupt: Power supplies are voltage sensed to prevent glitching of diskette thus providing you with more reliable data processing.
- Daisy Chain Logic: The FD511A and FD514 contain all the logic required to daisy chain up to four units.
- Data Separation: In single density operation, data and read clock are separated at the interface to reduce controller hardware costs.
- Composite Index/Sector Signal: The unit provides composite index/sector information as is found in soft sector operation.
- 50 Pin Ribbon Cable I/O.
- Black Trim: Standard on FD511A or FD514.
- Drive Select: A standard drive is set at address "0". In a daisy chain configuration, the unit address may be changed to 1, 2, or 3 via dip switches installed on circuit board.
- Separated Index/Sector Information: A standard unit is set for soft sectoring. When using the unit in a hard sector configuration, the customer can provide separated index and sector information to the interface by switch selection.

OPTIONAL FEATURES

- Write Protect: The FD511A and FD514 cannot write when the write protect hole on the diskette is detected.
- —12V/—15V Negative Supply: The user can change from standard —5V to —12V/—15V by a simple jumper change.
- Head Load Select: When in a daisy chain configuration, head load select can be changed to 0, 1, 2, or 3. This allows the head to be loaded without having to select the unit.
- Direction/Step Logic: A standard unit is configured for step in/step out control. This can be reconfigured to direction and step control by a simple jumper change.

Pertec Flexible Disk Drive Specifications

Media	IBM Diskette or equivalent	
Tracks per Inch	48	
Number of Tracks	77	
Read/Write Track Width	0.047 mm (0.012 inch)	
Physical		
Height	87.6 mm (3.45 inches)	
Width	218.4 mm (8.6 inches)	
Depth	378.5 mm (14.9 inches)	
Weight	6.35 kg (14 pounds)	
Environment		
Temperature		
Operating	10°C to 42°C (50°F to 110°F)	
Non-operating	—40°C to 71°C (—40°F to 160°F)	
Relative Humidity		
Operating	20% to 80%	
Non-operating	5% to 95% (non-condensing)	
Operating Shock	1.5g for 11 msec	
Vibration	6 — 600 Hz 0.5g peak	
Performance		
Seek Time	10 msec track to track	
Head Settling Time	20 msec (last track addressed)	
Head Loading Time	40 msec (maximum)	
Error Rate (Maximum)	1 per 10^9 recoverable, 1 per 10^{12} non-recoverable	
Head Life	20,000 hours (normal use)	
Media Life	5 million passes on a single track	
	FD5X0, FD511A, FD514	**FD410**
Disk Speed	360 rpm ±1.5%	360 rpm ±1.5%
Instantaneous Speed Variation	±1.6% per Hz at 60 Hz ±2% per Hz at 50 Hz	±1.25%
Start/Stop Time	2 seconds (maximum)	1 second (maximum)
Recording Parameters		
Transfer Rate	250K bits/sec 500K bits/sec (Opt.)	250K bits/sec 500K bits/sec (Opt.)
Recording Density (inside track)	3268 bpi 6536 bpi (Opt.)	3268 bpi 6536 bpi (Opt.)
Maximum Bits per Disk[1]	3.2 million 6.4 million (Opt.)	3.2 million 6.4 million (Opt.)
Maximum Bits per Track[1]	41,665 83,330 (Opt.)	41,665 83,330 (Opt.)
Recording Mode	FM Double Density (Opt.)	FM Double Density (Opt.)
Power Requirements	+24 ±1v dc at 1.4A maximum +5 ±0.25v dc at 1.1A maximum —5 ±0.25v dc at 0.3A maximum 90 — 130v ac at 60 Hz 190 — 250v ac at 50 Hz 90 — 120v ac at 50 Hz	+24 ±1v dc at 1.1A maximum (average) +5 ±0.25v dc at 0.7A maximum —5 ±0.25v dc at 0.15A maximum

[1]unformatted.

PERTEC DIVISION

9600 Irondale Avenue, Chatsworth, California 91311
Phone (213) 999-2020 / TWX 910-494-2093

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Policy Note: Pertec reserves the right to change specifications at any time. It is Pertec policy to improve products as new techniques and components become available.

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