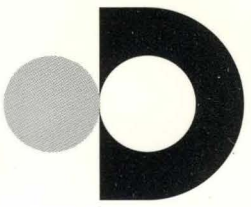


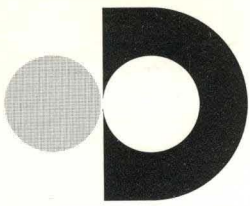
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DYNASTOR INC.

**SERIES FX 300
DISK DRIVES**





The FX 300 Minidisk is a flying head disk system. The head is never in contact with the recording medium, resulting in disk life equivalent to that found on hard disks. The drive combines rapid seeking, low latency, and a high data transfer rate to provide the highest throughput of any low cost data storage system. A proprietary head positioning provides guaranteed interchangeability of cartridges through use of a track following servo system. Dynastor uses a completely enclosed cartridge using standard flexible 1½ mil. mylar medium. The complete enclosure around the medium insures that it is never exposed to contamination by the operator or storage environment. The cartridge is removed only when inside the drive; and because of its flying head reliability, has infinite operation and storage life. Dynastor warrants the recording medium against defects for a period of five years. Each cartridge can be write protected by the removal of a snap-on clip and is fully certified at the factory prior to shipment. The low cost of the Dynastor minidisk systems make them very attractive for interfacing to mini-computers, micro-computers, terminals or other low cost data handling systems.

HEAD POSITIONING SYSTEM

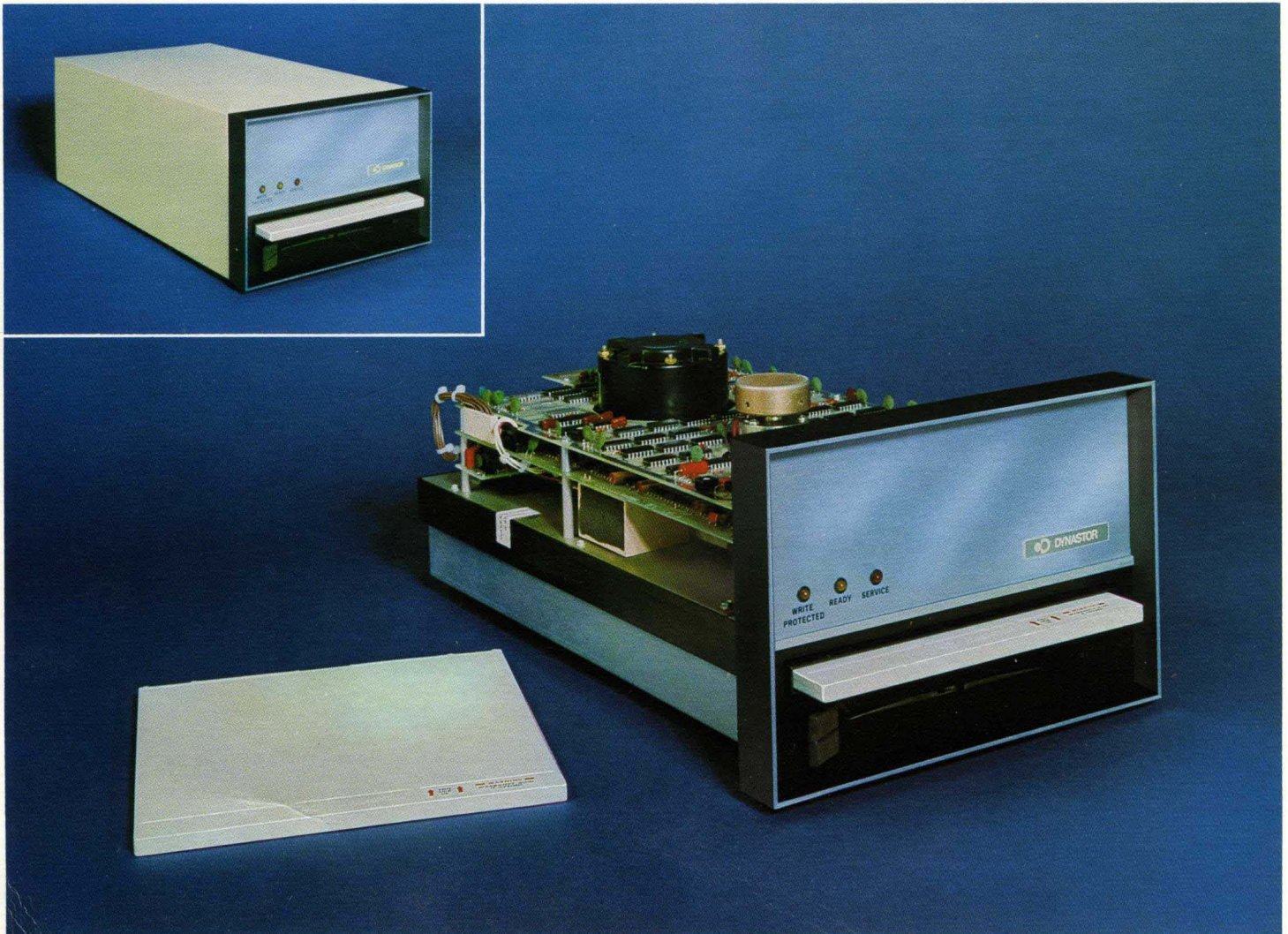
The FX 300 Series proprietary head positioning system incorporates a closed loop servo system which detects pre-recorded servo data on the disk, eliminating the effects of temperature and humidity on head positioning accuracy. This means cartridge interchangeability is guaranteed and there are no mechanical adjustments in this system.

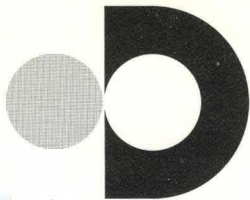
The motor is mounted directly on the spindle shaft. This eliminates belts, pulleys and idler systems from the drive which removes wear and pulley tolerances as elements of spindle control or as sources of internal contamination.

DYNASTOR MODEL 30, 40 AND 50

The Model 30 is a single drive having a capacity of 2,048 sectors of 1,040 data bits per cartridge. This is equivalent to 266,240 bytes per cartridge or 2,129,920 data bits.

The Model 40 is a system consisting of two independent disk drives with a single electronics package controlling them. This system is particularly useful and cost effective when operation does not require large amounts of copying or switching





between the two units. Operation of one of the units may continue while a cartridge is being exchanged on the other.

The Model 50 is a system consisting of two completely independent disk drives each with its own electronics package. The system consists of two Model 30's packaged side by side interconnected by a cable. This system is particularly useful where a large amount of copying or switching operations between units are performed. The Model 50 permits overlap seeks.

FAD CONTROLLER

Dynastor offers a controller called the FAD (formatting, addressing, decoding). The FAD is a universal mini-controller which is TTL and DTL compatible for a simplified interface design. It permits data transfer rates from 0 to 2.54 megabits per second, and selection of sector lengths equivalent to 130, 260, or 520 bytes corresponding to 32, 16, or 8 sectors per track.

The FAD is packaged on one printed circuit card that is mounted on the drive above the basic electronics. The printed circuit cards are easily removed for maintenance.

INTERFACES

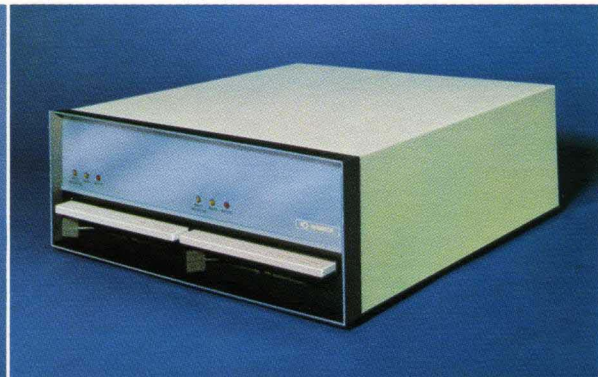
Dynastor offers interfaces to PDP-8, PDP-11 and NOVA computers and to Monroe calculators. The PDP-8 and PDP-11 interfaces have been designed so that they are totally compatible with the interface for the RX01 disk drives of DEC. This means the standard OS-8 or RT-11 software will operate with the Dynastor FX 300 disk drives. For the NOVA system, Dynastor has developed a software package containing the assembler, editor, stand-alone BASIC and some utility programs.

SPECIAL INTERFACES

Interfaces for a number of systems are available through Dynastor customers. Consult Dynastor for availability and appropriate contacts.

PACKAGING

The Model 30 can be packaged in either a 10" wide or 19" wide configuration. The Model 40 and Model 50 come in 19" wide configuration. All are 7" high and 19" deep. Bezels and covers are available for each of these configurations. Slides may be added to all 19" packages. Dynastor also has a power supply option adequate to supply a Model 30, 40 or 50.



SPECIFICATIONS

OPERATING CHARACTERISTICS

DATA STORAGE: Uses Dynastor Enclosed Cartridge or approved equivalent.

USABLE DATA CAPACITY	MODEL 30	MODEL 40/50
Sectors per Track	32	32
Tracks per Cartridge	64	64
Bytes per Sector	132	132
Sectors per Cartridge	2,048	2,048
Bytes per Cartridge	266,240	266,240
Bits per Cartridge	2,129,920	2,129,920
Usable Bits	2,129,920	4,259,840
Bit Density	3700 BPI	
Track Density	50 TPI	
Transfer Rate	2,540 KBS	

ACCESS TIME (including latency & head settling)

Rotation	3600 rpm
Average Latency	8.33 msec.
Maximum Head Positioning	
Track to Track	100 msec.
Average Move	200 msec.
Maximum Move	300 msec.

POWER

Voltage Requires AC..... 115 VAC 60 Hz 1 Φ
starting current @ 0.55 amps.
running current @ 0.35 amps.
DC..... + 5 VDC 3% @ 5.0 amps.
 + 12 VDC 3% @ 3.0 amps. } 50% duty
 - 12 VDC 3% @ 3.0 amps. } cycle max.

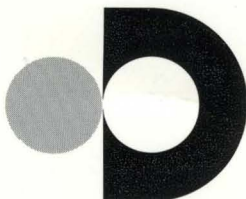
PHYSICAL	MODEL 30	MODEL 40/50
Width	10 1/4 inches	19 inches
Depth	17 inches	19 inches
Height	7 inches	7 inches
Weight Approx.	15 pounds	30 pounds

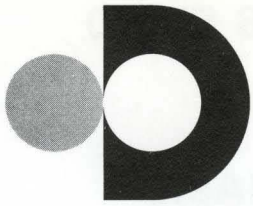
ENVIRONMENT SPECIFICATIONS:

Operating:
Temperature 50°F to 100°F (machine ambient)
Relative Humidity 20% to 80% (non-condensing)

Non-Operating:
Temperature 0°F to 160°F

Warranty: 6 months on mechanism, 5 years on recording medium.





DYNASTOR INC.

DYNASTOR SERIES FX300

DISK DRIVES

MODEL 30/40/50 FAD

INTERFACE DATA

The standard interface includes all input and output lines used in the execution of basic data transfer and control operations. Features providing additional capability are also provided. The FX 300 FAD (formatting, addressing, decoding) mini controller standard interface, features and options are described below:

A. INPUTS

UNIT SELECT — (Three lines) Selects one of 8 drives.

TRACK SELECT — (Six lines) Accept a six bit parallel binary track address.

SECTOR SELECT — (Five lines) Accept up to a five bit parallel binary sector address.

LOAD ADDRESS — (One line) A pulse on this line latches the SELECT lines and starts a seek to the selected address.

WRITE DATA — (One line) The data bit presented on this line is transferred to the FAD by the WRITE STROBE pulse.

WRITE STROBE — (one line) A WRITE STROBE is issued for each data bit to be written. The pulse rate may be varied asynchronously from 0 to 2.5 MHz.

READ INITIATE — (One line) A pulse on this line starts a sequence which causes the system to acquire the selected sector read data. The data is ready to be strobed to the interface when the BUSY line clears.

TRANSFER COMPLETE — (One line) This pulse is required for any write operation in which the data transferred is not a multiple of the selected sector length. The pulse causes the remainder to be filled with zeros. During a read operation, the pulse clears the TRANSFER NOT COMPLETE status line and resets the FAD.

READ STROBE — (One line) Each READ STROBE places the next data bit on the READ DATA line. The pulse rate may be varied from 0 to 2.5 MHz.

B. RESET:

RESET — (One line — Bi Directional) This signal terminates all operations and resets the FAD logic.

C. OUTPUTS:

READ DATA — (One line) A data bit is presented following each READ STROBE.

BUSY — (One line) When cleared, this status line permits interface instructions to be performed. When set, all interface instructions including strobes, are ignored. This status will be set during loading & unloading of cartridges and during the automatic startup sweep sequence.

TRANSFER NOT COMPLETE — (One line) READ INITIATE or the first WRITE STROBE sets this line. When the selected sector length has been transferred, this status line clears.

UNIT RESETTABLE — (One line) A logic level indicates that the unit can be reset by command.

UNIT READY — (One line) Supplies a maintained logic level when the selected unit is ready for operation.

UNIT WRITE PROTECT — (One line) The status of the write protect interlock circuitry is displayed on this line.

2.5 MHZ OSC — (One line) A nominal 2.5 MHZ OSC square wave is available for use by the interface.

CRC ERROR — (One line) When set, this line indicates that a read data error has been detected. The error indication is reset only by LOAD ADDRESS.

D. MASTER WRITE PROTECT FEATURE:

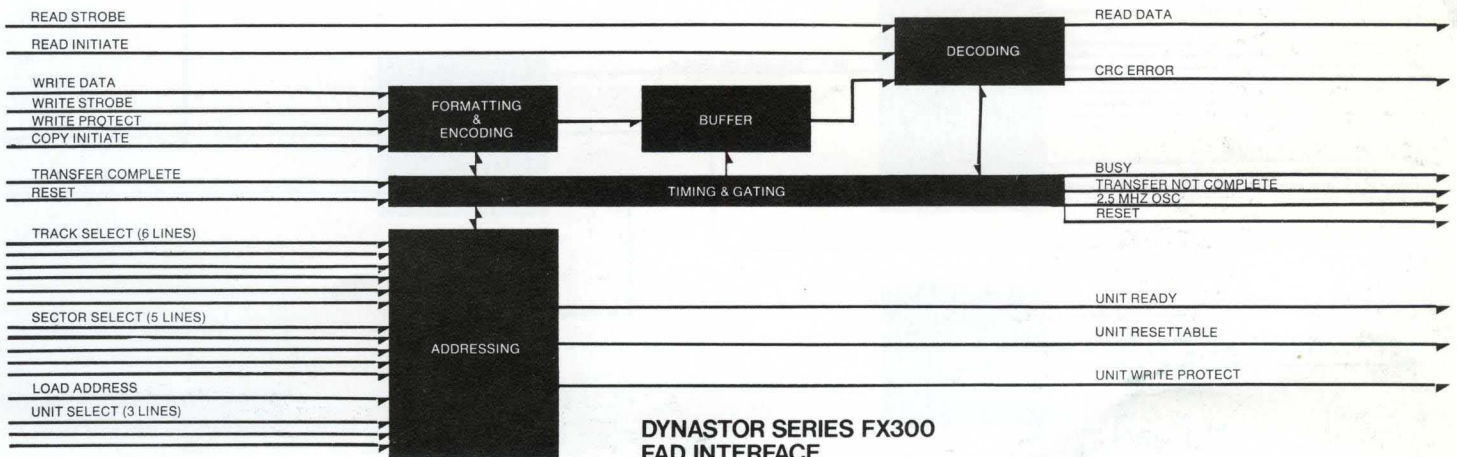
WRITE PROTECT — (One line) When enabled, all drives are write protected.

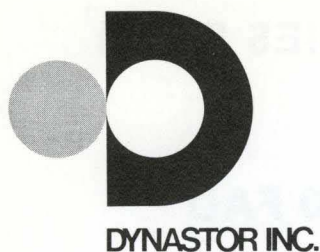
E. COPY FEATURE:

COPY INITIATE — (One line) After a read operation and the data is ready for strobing, a new address may be selected followed by the COPY INITIATE pulse. This operation causes the data to be rewritten on the selected sector without the data being transferred to and from the interface.

F. SELECTABLE SECTOR LENGTH FEATURE:

A jumper within the FAD allows the selection of 130, 260 or 520 byte sectors. A second jumper may be added to select 260 or 520 12 bit word sectors.





DYNASTOR SERIES FX300

DISK DRIVES

MODEL 30/40/50 BASIC

INTERFACE DATA

The standard interface includes all input and output lines used in the execution of basic data transfer and control operations. Interface features providing additional capability are also provided. The FX 300 Basic standard interface, features and options are described below:

A. INPUTS:

WRITE DATA PULSES — (One line) For transferring write data pulses (one pulse for each recorded flux reversal) from the controller.

WRITE GATE — (One line) When activated, causes the write circuitry to record the data that appears on the WRITE DATA PULSES line.

UNIT SELECT — (Three lines) Enables one of 8 drives to be individually selected.

TRACK DIFFERENCE — (Seven lines) Accept a seven bit parallel binary absolute track address difference.

TOWARD HIGHER TRACK — (One line) Indicates the direction the actuator is to be moved.

LOAD DIFFERENCE — (One line) A pulse on this line causes the TRACK DIFFERENCE and TOWARD HIGHER TRACK inputs to be set into track position control logic.

UNIT ENABLE — (One line) This line must be activated during a seek, read, or write operation.

INTERFACE POWER OK — (One line) Required if FX 300 unit and interface have separate +5V power supplies. Down level indicates the interface power supply level is within the $\pm 5\%$ tolerance range. This line guarantees that the FX 300 unit will disregard any signal appearing on

input lines during interface power sequencing. When single power supply is used, this line is grounded.

B. RESET:

RESET — (One line — Bi Directional) When activated all drives requiring reset are reset. Drives initiate a RESET status during a drop in DC power.

C. OUTPUTS:

READ DATA PULSES — (One line) Each pulse corresponds to a flux transition previously written on the disk.

SECTOR PULSE — (One line) The lagging edge of the SECTOR PULSE marks the sector. The sector number is detected from the preformatted address information on the disk.

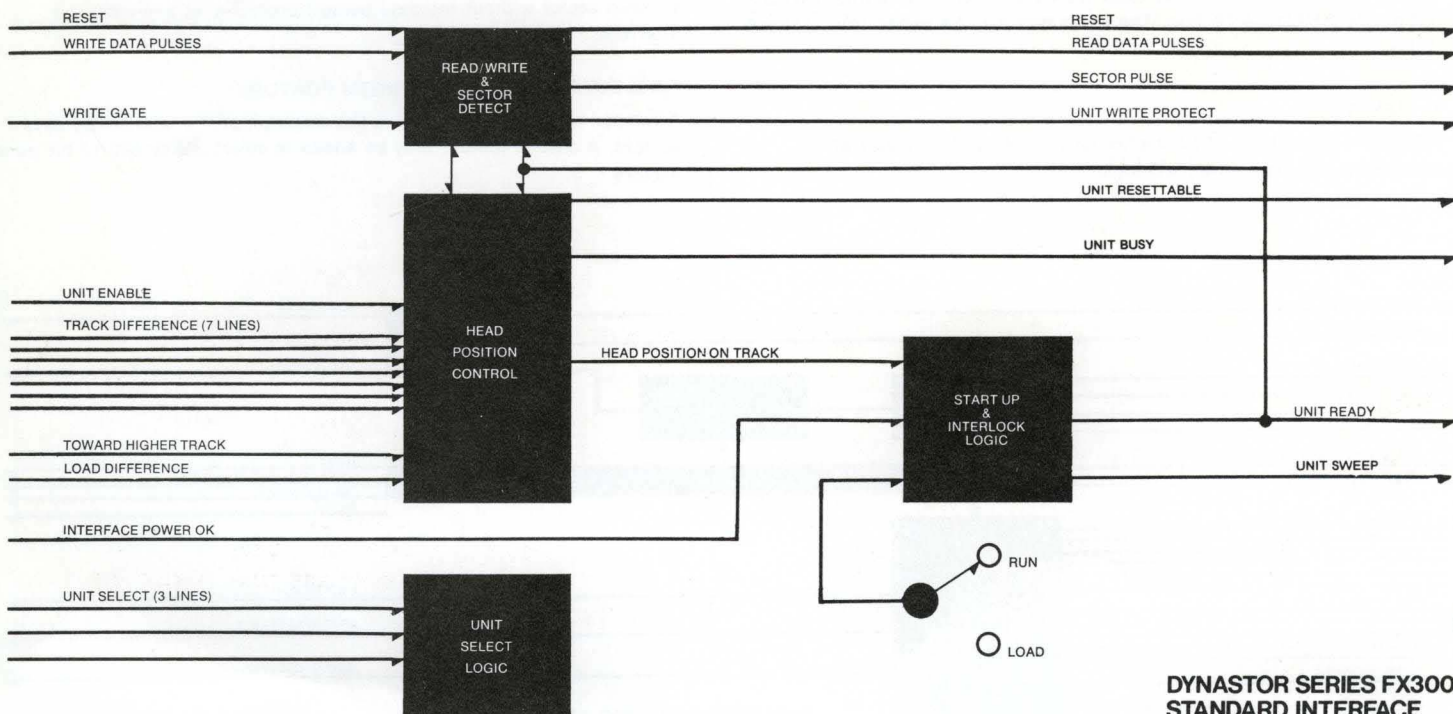
UNIT READY — (One line) Supplies a maintained logic level when the unit is ready for operation.

UNIT BUSY — (One line) Provides a logic level when the unit is moving to a new track, a cartridge is being loaded or unloaded, or when the unit is initializing.

UNIT RESETTABLE — (One line) A logic level indicates that the unit can be reset by command.

UNIT SWEEP — (one line) A logic level indicates that a cartridge has been loaded and the unit needs to be accessed between outer tracks to initialize the disk.

UNIT WRITE PROTECT — (One line) Supplies a maintained logic level signal when the write enable circuit is in the write protect mode. This disables the write amplifier during the absence of the cartridge clip.



**DYNASTOR SERIES FX300
STANDARD INTERFACE**

FX 300 SERIES DISK DRIVE PRICE SCHEDULE
(Effective July 1, 1976)

BASE SYSTEM (Includes Write Protect feature)

FX 300 - Model 30	\$1,210.00	(Single Unit)
FX 300 - Model 30R	\$1,250.00	(Single Unit)
FX 300 - Model 40, 40R	\$2,100.00	(Two Units; single electronics)
FX 300 - Model 50, 50R	\$2,500.00	(Two 30's; packaged side by side & interconnected)

(R indicates Rackmount-19 inches wide & flush bottom. Order slides separately-See Below.)
(Without R, system has rubber feet.)

MINI-CONTROLLER (Includes CRC feature, Terminator & Board Interconnection)

FX 300 - FAD 32	\$ 400.00
FX 300 - FAD 16	\$ 425.00
FX 300 - FAD 8	\$ 500.00

INTERFACES (Requires a FX 300 - FAD 32)

FX 300 - NOVA or D116 Interface	\$ 400.00	(External IOBUS required on CPU. Order Cable & Terminator separately-See Below.)
NOVA Terminator	\$ 50.00	
NOVA IOBUS Cable	\$ 200.00	(5 feet long; specify CPU)
NOVA OP SYSTEM	\$ 250.00	
FX 300 - PDP-8 Interface	\$ 400.00	(1 CPU slot; includes Cable)
FX 300 - PDP-11 Interface	\$ 400.00	(1 CPU slot; includes Cable-specify 11/xx or LSI-11)
FX 300 - Monroe 1800 Interface	\$ 400.00	(Order Cable separately-See Below.)
Monroe Cable	\$ 100.00	(5 feet long)

PACKAGING/OPTIONS/ACCESSORIES

220 Volt Option	\$ 30.00	
50 HZ Option	\$ 30.00	
Bezel	\$ 50.00	(front panel)
Cover*	\$ 120.00	(black)
Rack Slides*	\$ 75.00	
Manual	\$ 5.00	(Includes Schematics)
Cleaning Tool	\$ 30.00	
Recording Cartridges	\$ 16.00	
Air Filters	\$ 10.00	
Interfacing Kit	\$ 100.00	
Spare Drive Electronics	\$ 500.00	

*Note: Cover & Slides cannot be on the same unit.

POWER & CONNECTORS

Power Supply	\$ 300.00	(AC & DC Cables are included)
AC Power Cable	\$ 6.00	(1 needed per system)
DC Power Cable	\$ 17.00	(1 needed per Model 30 or 40, or 2 per Model 50)
DC Connector Kit	\$ 2.00	(1 needed per Model 30 or 40, or 2 per Model 50)
Interface Connector Kit	\$ 5.00	

DISCOUNTS (per each item)

<u>Annual Quantity</u>	<u>Discount</u>	
1 - 9	None	Shipments are F.O.B. Denver.
10 - 24	5%	Shipments of small items are made by
25 - 49	10%	Air Parcel Post. All systems are normally
50 - 99	15%	shipped by Air Freight.
100 - 249	20%	
250 - 500	25%	
500 & UP	Consult Factory	