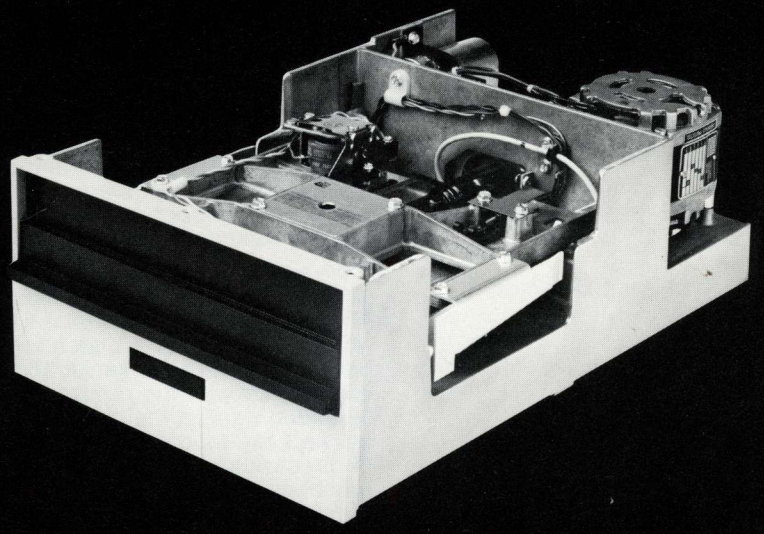
Shugart Associates

SA800/801
SA800R/801R

Diskette Storage Drives



Shugart's SA800/801 standard floppy disk drive is the established industry leader with over 200,000 units installed around the world. This floppy drive application leadership is backed by 11 patents and a technical staff with hundreds of man-years of disk drive engineering experience.

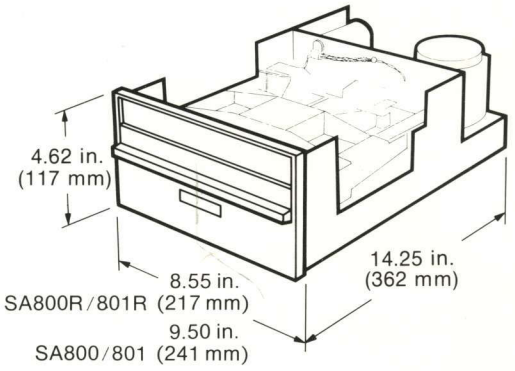
The SA800R/801R floppy disk drive is mechanically and electronically the same as the SA800/801 except it has a narrower chassis width plus side and bottom mounting posts to facilitate installation of two drives side-by-side in a standard 19" RETMA rack.

SA800 series drives read and write diskettes for interchange with other model SA800 drives and with the SA900, IBM 3741, 3742 or 3540 and IBM System 32. The SA801 and SA801R provides the same features as the SA800 and SA800R with additional flexibility for those requirements which preclude IBM compatibility.

SA800 series drives have these standard features: a patented diskette clamping/registration design which eliminates the possibility of damage to the diskette due to misregistration and guarantees over 30,000 interchanges with each diskette; single and double density capability on the same drive for the same price; a proprietary ceramic R/W head designed and manufactured by Shugart to provide media life exceeding 3.5 million passes/track with head life exceeding 15,000 hours; an activity light which indicates drive in use; and ribbon cable or twisted pair connector for ease of packaging. Typical applications include: key entry systems, point-of-sale recording systems, batch terminal data storage, microprogram load and error logging, minicomputer program and auxiliary data storage, word processing systems and data storage for small business systems.

Key Features

- Bottom and side mounting holes for ease of installation and maintenance (SA800R/801R).
- Single and double density capability.
- Proprietary ceramic R/W head designed and manufactured by Shugart.
- Side-by-side mounting in standard 19" RETMA rack (SA800R/801R).
- Die cast cartridge guide and base plate.
- Patented positive diskette clamping registration.
- Patented pop-out diskette retrieval.
- Flexible interface with multiplex capability.



Specifications

Functional Characteristics

SA800 series Diskette Storage Drives consist of read/write and control electronics, drive mechanism, read/write head, track positioning mechanism, and the removable diskette. These components perform the following functions:

—Interpret and generate control signals.
—Move read/write head to the selected track.
—Read and write data.

The relationship and interface signals for the internal functions of the SA800/801 are shown below.

The Head Positioning Actuator positions the read/write head to the desired track on the diskette. The Head Load Solenoid loads the diskette against the read/write head and data may then be recorded or read from the diskette.

The electronics are packaged on one PCB which contains:

1. Index Detector Circuits (Sector/Index for 801)
2. Head Position Actuator Driver
3. Head Load Solenoid Driver
4. Read/Write Amplifier and Transition Detector
5. Data/Clock Separation Circuits
6. Write Protect
7. Drive Ready Detector Circuit
8. Drive Select Circuits

Drive Mechanism

The Diskette drive motor rotates the spindle at 360 rpm through a belt-drive system. 50 or 60 Hz power is accommodated by changing the drive pulley and belt. A registration hub, centered on the face of the spindle, positions the diskette. A clamp that moves in conjunction with the cartridge guide fixes the diskette to the registration hub.

Positioning Mechanism

The read/write head assembly is accurately positioned by a precision lead screw and stepping motor. A follower is attached to the lead screw and to the head carriage assembly. Each 15° rotation of the stepping motor/lead screw assembly moves the read/write head one track in discrete increments.

Read/Write Head

The proprietary head is a single element ceramic read/write head with straddle erase elements to provide erased areas between data tracks. Thus normal interchange tolerances between media and drives will not degrade the signal to noise ratio and insures diskette interchangeability.

The read/write head is mounted on a carriage which is located on the Head Position Actuator lead screw. The diskette is held in a plane perpendicular to the read/write head by a platen located on the base casting. This precise registration assures perfect compliance with the read/write head. The diskette is loaded against the head with a load pad actuated by the head load solenoid. The read/write head is in direct contact with the diskette. The head surface has been designed to obtain maximum signal transfer to and from the magnetic surface of the diskette with minimum head/diskette wear.

Performance Specifications

Capacity	Single Density	Double Density
Unformatted		
Per Disk	400 kilobytes	800 kilobytes
Per Track	5.2 kilobytes	10.4 kilobytes
IBM Basic Format		
Per Disk	250 kilobytes	n/a
Per Track	3.3 kilobytes	n/a
Transfer Rate	250 kilobits/sec.	500 kilobits/sec.
Latency (avg.)	83 ms	83 ms
Access Time		
Track to Track	8 ms	8 ms
Average (including settling)	211 ms	211 ms
Settling Time	8 ms	8 ms
Head Load Time	35 ms	35 ms

Functional Specifications

	Single Density	Double Density
Rotational Speed	360 rpm	360 rpm
Recording Density (inside track)	3200 bpi	6400 bpi
Flux Density	6400 fci	6400 fci
Track Density	48 tpi	48 tpi
Tracks	77	77
Physical Sectors		
SA800R	0	0
SA801R	32/16/8	32/16/8
Index	1	1
Encoding Method	FM	MFM/M²FM
Media Requirements		
SA800/800R	SA100/IBM Diskette 1	SA102/IBM Diskette 1
SA801/801R	SA101	SA103
Alignment Diskette	SA120	SA120

Physical Specifications

Environmental Limits
- Ambient Temperature = 40° to 115°F (4.4°C to 46.1°C)
- Relative Humidity = 20% to 80%
- Maximum Wet Bulb = 78°F (25.6°C)

AC Power Requirements
- 50/60 Hz ±0.5 Hz
- 100/115 VAC Installations = 85-127V at .4A typical
- 200/230 VAC Installations = 170-253V at .2A typical

DC Voltage Requirements
- +24 VDC ±5% 1.3A typical
- + 5 VDC ±5% 0.8A typical
- — 5 VDC ±5% .05A typical (option —7 to —16 VDC)

Mechanical Dimensions (exclusive of front panel)

	SA800R/801R	SA800/801
Height	4.62 in. (117 mm)	4.62 in. (117 mm)
Width	8.55 in. (217 mm)	9.50 in. (241 mm)
Depth	14.25 in. (362 mm)	14.25 in. (362 mm)
Weight	13.0 lbs. (5.91 kg)	13.0 lbs. (5.91 kg)

Heat Dissipation = 245 BTU/hr. typical (72 watts)

Reliability Specifications

MTBF: 5000 POH under heavy usage
8000 POH under typical usage
PM: Every 5000 POH under heavy usage
Every 15,000 POH under typical usage
MTTR: 30 minutes
Component Life: 15,000 POH

Error Rates:
- Soft Read Errors: 1 per 10^9 bits read
- Hard Read Errors: 1 per 10^{12} bits read
- Seek Errors: 1 per 10^6 seeks

Media Life: Passes per Track: 3.5×10^6
Insertions: 30,000 +

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