**FWD0106/FWD1106**

**LSI-11/PDP-11 FLOPPY WINCHESTER DISK CONTROLLER**

**DIRECT INTERFACE TO:**
- 5¼" WINCHESTER DISKS
- 5¼" MINIFLOPPY DISKS
- 8" SLINLINE FLOPPY DISKS

**SMS “FLINCHES” CONTROLLER**

**FEATURES**
- Single controller for up to (2) 5½” Winchester fixed disks and (2) 5½” minifloppy disks or (2) 8” slim line floppy disks.
- Supports 5½” Seagate STS06/142 compatible Winchester fixed disks.
- Supports 5½” Shugart SA410/460 compatible minifloppy disks.
- Supports 8” slim line floppies that are Shugart SA810/960 or Tandon TMS48 compatible.
- DEC RX02 floppy disks interface compatible.
- DEC RX01, RX02, RX03, IBM 3740 and IBM 2/2D 8” disk format compatible.
- 5½” floppy disk simulates modified RX01, RX02, IBM double density floppy formats.
- Full 22 bit Q-bus addressing.
- Dual board configuration.
- LSI-11 quad height formatter board that can be mounted separately or in Q-bus backplane.
- LSI-11 dual height interface board or PDP-11 quad height interface board.
- High performance DMA operations.
- Bootstrap operation from either floppy or fixed disk.
- Comprehensive self test.
- Selectable device register and interrupt vector address.
- Programmable sector size 128, 256, 512, or 1024 bytes for floppy; 256 or 512 bytes for fixed disks.
- Bad sector management and 6 bit burst ECC for fixed disks.
- Single +5 volt power supply.
- Complete RT-11 and RSX-11M software support for extended functions.
- Complete standalone software for system installation and test.
- Software compatible with SMS FWD0101/FWD1101 8” Winchester/floppy controller.

**DESCRIPTION**

The FWD0106 is a complete PDP-11 controller for both floppy disk and the latest 5¼” Winchester fixed disks. It is composed of two PC boards; a formatter and interface board which is plug compatible with the LSI-11 Q-bus.
sector management is supported for a Winchester fixed disk through commands which allow the host to read/write a file map unique to a disk drive. The controller automatically compensates for bad sectors during read/write operations by references to the flaw map. When power is applied the flaw map is read from the Winchester and stored in controller memory.

**FORMATTER**

Single quad height PC board compatible with DEC LSI-11 Q-bus. The formatter board may be mounted in and powered with a quad wide Q-bus slot. The formatter board may be optionally mounted and powered outside the Q-bus backplane. Self test switches and LED’s have provisions for remote access.

**INTERFACE**

Single dual height PC board compatible with DEC LSI-11 Q-bus or quad height PC board compatible with DEC PDA-11 Unibus. A 40 pin flat ribbon connector on the PC board is used to cable between formatter and interface PC boards. Includes logic for emulating DEC hardware, controlling DMA operations, generating interrupts, etc. The device address and interrupt vector is jumper selectable.

**Disk Format Capacity**

5 1/4" Winchester Disk

<table>
<thead>
<tr>
<th>Type</th>
<th>Average Access Time</th>
<th>No. Heads</th>
<th>No. Cylinders</th>
<th>Average Latency ms</th>
<th>Transfer Rate Kbytes/Sec</th>
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<td>153</td>
<td>8.3</td>
<td>625</td>
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<tr>
<td>ST412</td>
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<td>4</td>
<td>306</td>
<td>8.3</td>
<td>625</td>
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<td>80</td>
<td>100</td>
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<tr>
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<td>77</td>
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<td>83.3</td>
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</table>

**CONTROLLER SPECIFICATIONS**

**MECHANICAL**

- Quad height PC board plug compatible with LSI-11 backplane. Provisions also for mounting outside of backplane.
- Dual height PC board plug compatible with LSI-11 backplane.
- Quad height PC board plug compatible with PDA-11 backplane.
- 40 pin 3M connector (3615-0000), maximum cable length 15 feet.

**ENVIRONMENT**

- 0°C to 50°C system ambient operating temperature. 10% to 90% relative humidity.
- 4.7 Amps (max.) @ +5 volts.
- 2.90 Amps (max.) @ +5 volts.
- 3.10 Amps (max.) @ +5 volts.

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All prices subject to change without notice.