FLEX02
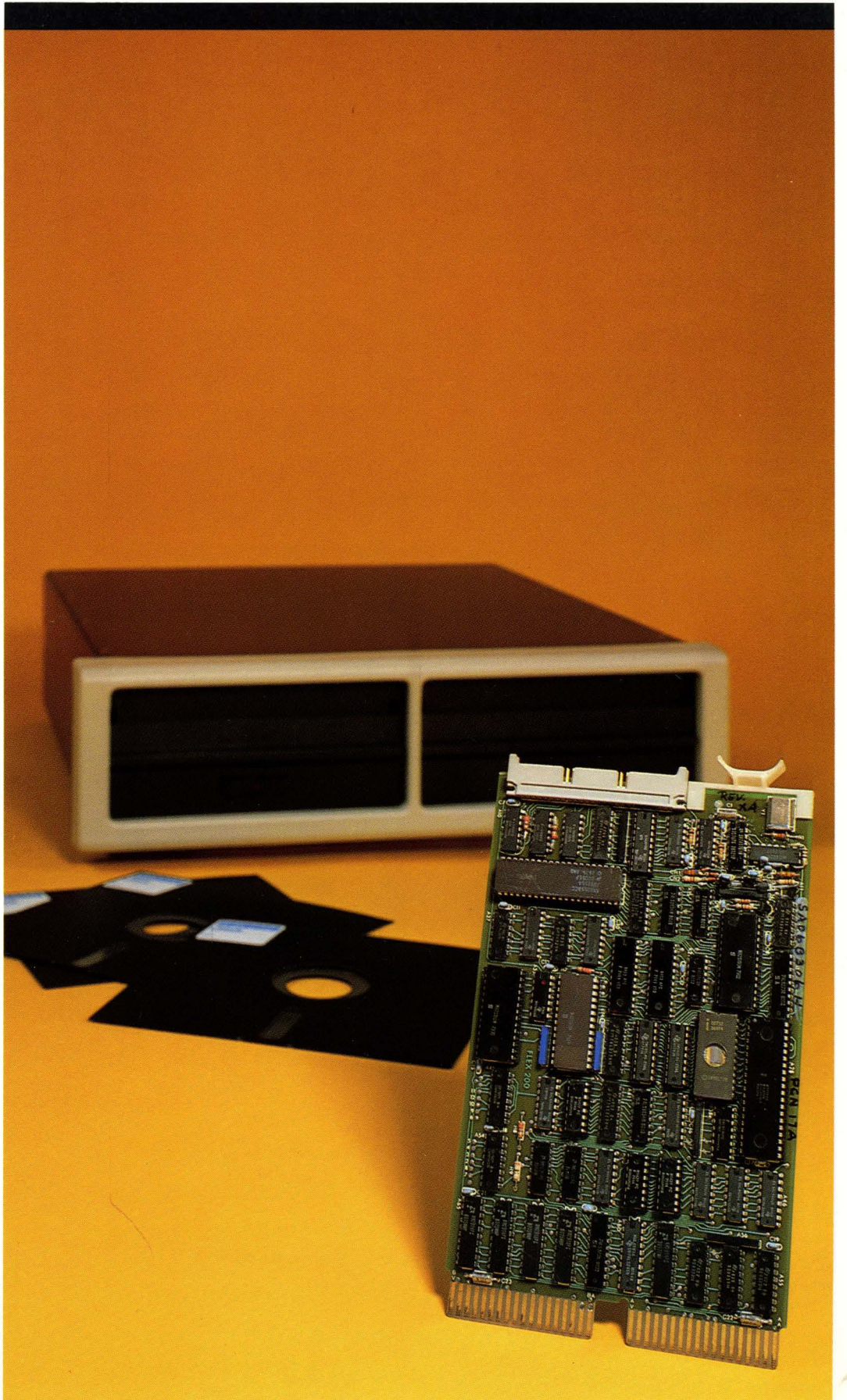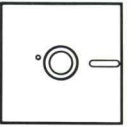
FLEX02 dual-width RX02 emulation board

ADVANCED ELECTRONICS DESIGN, INC.

Compatibility, flexibility, and performance.

These are the three most important features to consider when selecting a state-of-the-art alternative to the DEC RX02 floppy disk drive controller. Advanced Electronics Design's FLEX™ controller provides all three—on a single, dual-width card.

FLEX02 is a complete RX02 emulator that plugs directly into your LSI-11. It is 100% media, software, and hardware compatible with the DEC LSI-11 microcomputers, and fully transparent to all DEC operating software.

FLEX02 scores high in user flexibility, too, since it accommodates double-sided diskettes, as well as single- or double-density formats.

In performance, FLEX02 is peerless, offering substantially faster data throughput than DEC's RX02, and a number of built-in extras including an on-board bootstrap.

Compatibility, flexibility, and performance. Three features of FLEX02 that become even more impressive when you consider one fact: FLEX02 costs significantly less than the DEC equivalent.
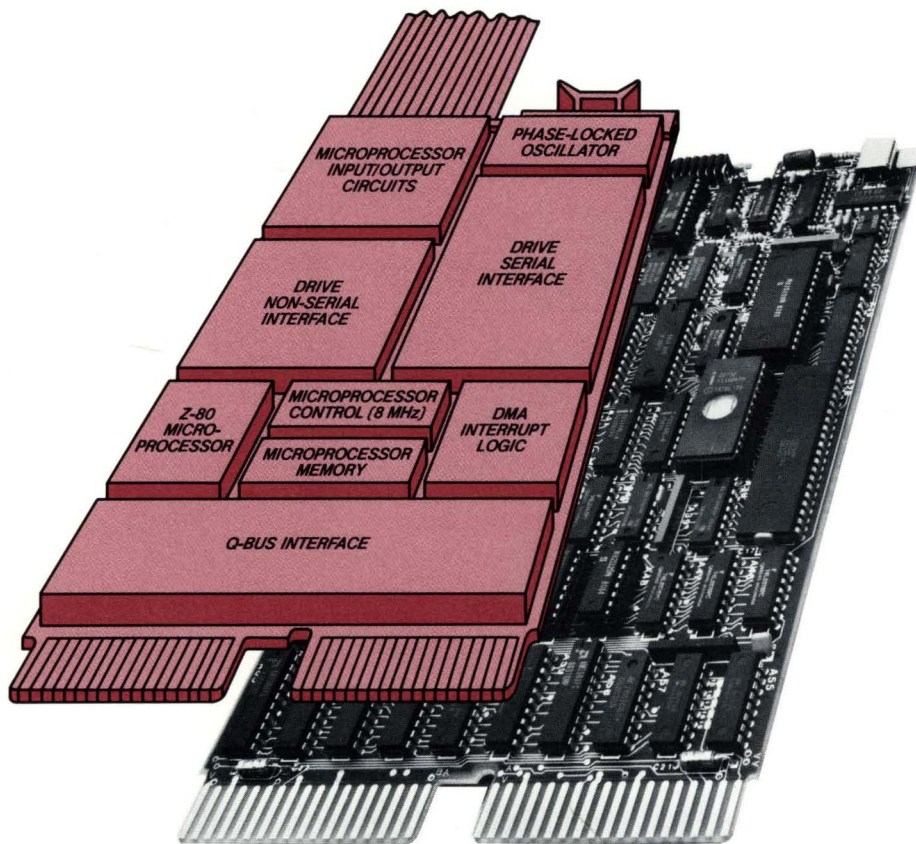
IMMEDIATE FLOPPY DISK STORAGE CAPABILITY FOR LSI-11, /2, /23 USERS

The FLEX02 controller has been designed using advanced architecture based on state-of-the-art bipolar and MOS microprocessor technology. This technology enables FLEX02 to be packaged on a single, dual-width printed circuit board.

The board plugs directly into the backplane of your LSI-11 Series computer, providing your system with immediate floppy disk storage capability.

THE BENEFITS OF THE FLEX02 CONTROLLER

The innovative design of FLEX02's board architecture provides a number of immediate user benefits. For example, using one dual-wide card instead of a quad-wide card for floppy disk system control saves space.

In addition, AED's unique design minimizes component count. This means greater reliability and lower power consumption. Both of these factors have a positive impact on your system's cost/performance ratio.

FASTER DATA THROUGHPUT

FLEX02 offers 15% faster data throughput capability than DEC's RX02. When used with DEC's RT11 foreground/background monitor, FLEX02 offers up to 70% faster data throughput than DEC's RX02.

This considerable increase in efficiency is made possible by the algorithm used by the FLEX02 controller to verify disk density format. The algorithm is significantly faster than DEC's and serves to eliminate missed drive revolutions. The result: faster data throughput!

UNIQUE, BUILT-IN BOOTSTRAP

FLEX02 features a unique, on-board 512-byte PROM bootstrap. This makes a separate bootstrap driver unnecessary, and saves a backplane slot. What is more, the built-in bootstrap has been specially designed to emulate the DEC BDV11 bootstrap card. This means FLEX02 can provide bootstrap capability for all standard CPU disk devices—not just those supplied by AED. Users with different types of disk drives on their system will appreciate the added convenience resulting from this approach.

FULLY TRANSPARENT OPERATION

FLEX02 is completely transparent to all DEC system software. This eliminates the need to write any additional software as long as single-sided diskettes are used. Minor software modifications will accommodate double-sided operation.

In addition, to prevent product obsolescence, FLEX02 is specially designed to accommodate any future changes in DEC software through micro-code changes only. This eliminates the need to make changes in hardware to implement new features.

SEPARATE DATA-TRANSFER PATHS ELIMINATE ERRORS

Two data flow paths exist within the FLEX02. Data transfer between the disk and the controller's buffer is one operation. Transfers between the buffer and host memory is a separate operation. Thus, the danger of data overruns due to DMA contention from other devices in the host computer system is alleviated.

LESS DISKETTE WEAR, LONGER DRIVE HEAD LIFE

FLEX02 independently controls head loading on each drive, so the heads on both drives can remain loaded when data is passing from drive to drive.

This keeps both heads loaded for the maximum period of time, thereby minimizing loading and unloading cycles, and reducing overall media wear.

To ensure maximum head life, the drives supplied by AED employ ferrite ceramic read/write heads—the industry standard for durability and performance.

The double-sided drives consistently exceed 1 million head load cycles without appreciable media wear during tap testing.

SELF-TEST CAPABILITY SIMPLIFIES FIELD MAINTENANCE

To simplify field maintenance, FLEX02 has a unique self-test feature that automatically tests all major function blocks of the controller, 'in system'. FLEX02 will also run DEC's RX02 system diagnostics. In addition, AED provides diagnostic programs including drive, interface, and data reliability tests.

MEDIA INTERCHANGEABILITY

IBM 3740 format conforming to the proposed ANSI diskette standard provides interchangeability of single-density disks. The double-density format can be interchanged between any RX02 systems.

COMPLETE CONFIGURATION FLEXIBILITY

Depending on your needs, AED can supply a complete FLEX02 package (RX02 emulator card, DEC look-alike cabinet, 2 drives, power supply, and ribbon cable), the emulator card alone, or any combination of parts you require. AED includes a User's Guide that explains FLEX02's architecture, installation, and operation.

90-DAY WARRANTY

All AED computer peripherals are backed by a full 90-day warranty against defects in workmanship and design. Within the 48 contiguous States and Canada, the customer sends the malfunctioning unit back to AED, freight collect. AED will repair the unit at no cost and return it freight collect. Outside this area, the customer pays the round-trip freight costs.
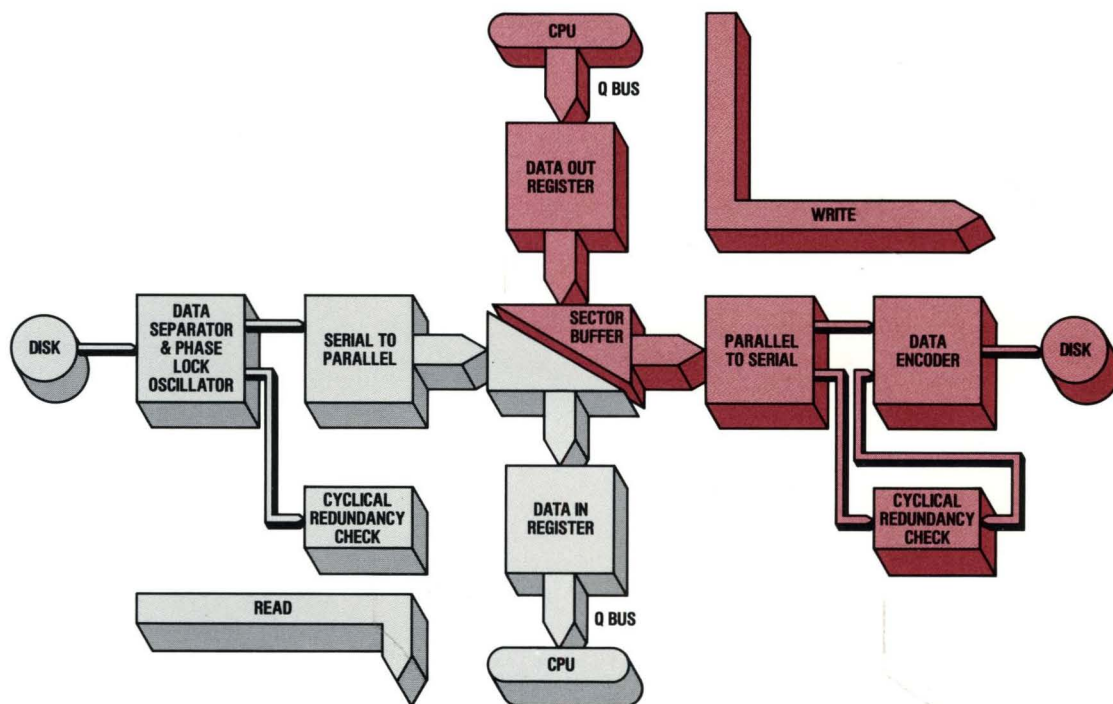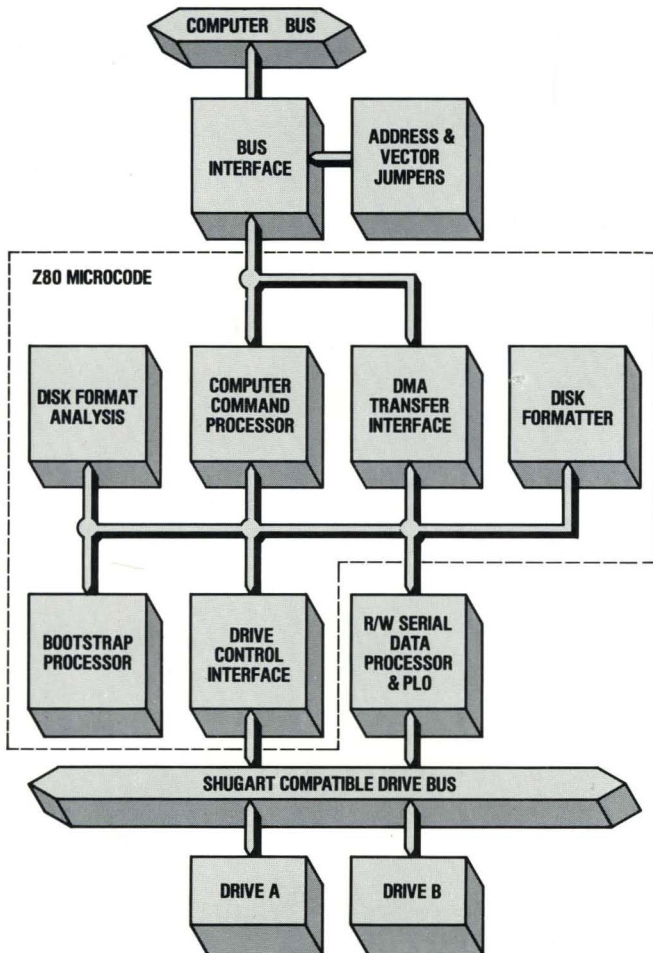
FLEX02 DATA FLOW

System Specifications

Drives installed:	**1**	**2**
Voltage (AC):	100, 115, 200, 230 VAC ± 10%	
Amperes @ 115 VAC:	2.0	2.3
@ 230 VAC:	1.0	1.2
Line frequency:	Either 50 or 60 Hz ± 1%	
Weight:	46 lbs	60 lbs
	21 kgs	27 kgs
Cabinet size:	5.25''H x 16.8''W x 22''D	
	13.4cmH x 42.7cmW x 55.9cmD	
Operating limits:	Temperature	
	50°-100°F (10°-38°C)	
Relative humidity limits:	20%-80%	
Altitude:	-500' to 10,000' (-152m to 3048m)	

FLEX02 CONTROLLER FUNCTIONAL BLOCK DIAGRAM

Standard FLEX02 Configuration

RX01, RX02 Media Compatible
8'' Floppy Disk Drives
Single Head or Dual Heads
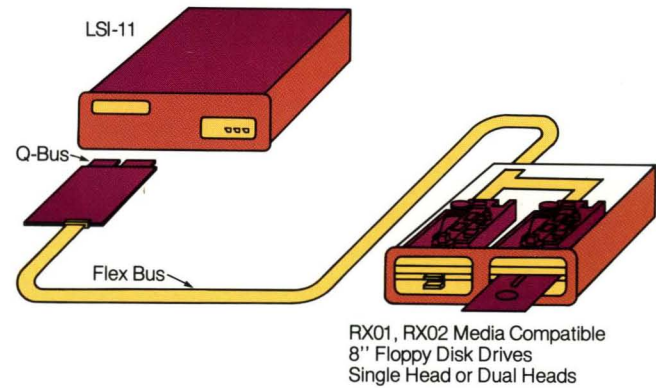
For LSI-11 Users — FLEX02 with WINC08

RX01, RX02 Media Compatible
8'' Floppy Disk Drive
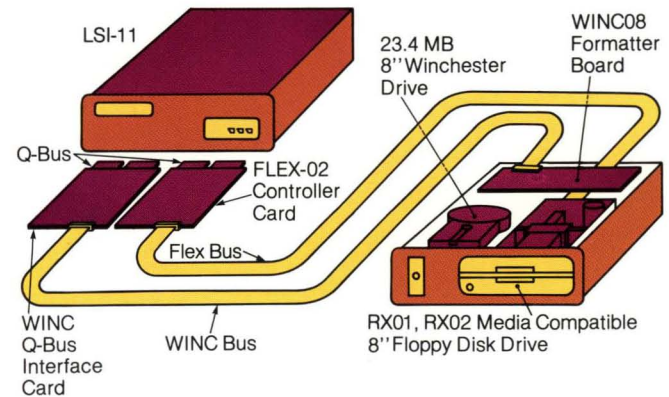
Drive Characteristics

	1 Sided		**2 Sided**
	Single Density	Double Density	Double Density
Capacity (Formatted)	256 Kbyte	512 Kbyte	1.0 megabyte
Heads	1	1	2
Tracks	77	77	77
Sectors/Track	26	26	26
Bytes/Sector	128	256	256
Avg Rotational Latency	87 ms	87 ms	87 ms
Positioning Times:			
min	18 ms	18 ms	18 ms
avg	312 ms	312 ms	91 ms
max	616 ms	616 ms	243 ms
Disk Transfer Rate	256 Kbits	512 Kbits	512 Kbits
DMA Transfer Rate-Peak	15 μs	15 μs	15 μs
Net Throughput	9.1 Kbytes	18.3 Kbytes	18.3 Kbtes