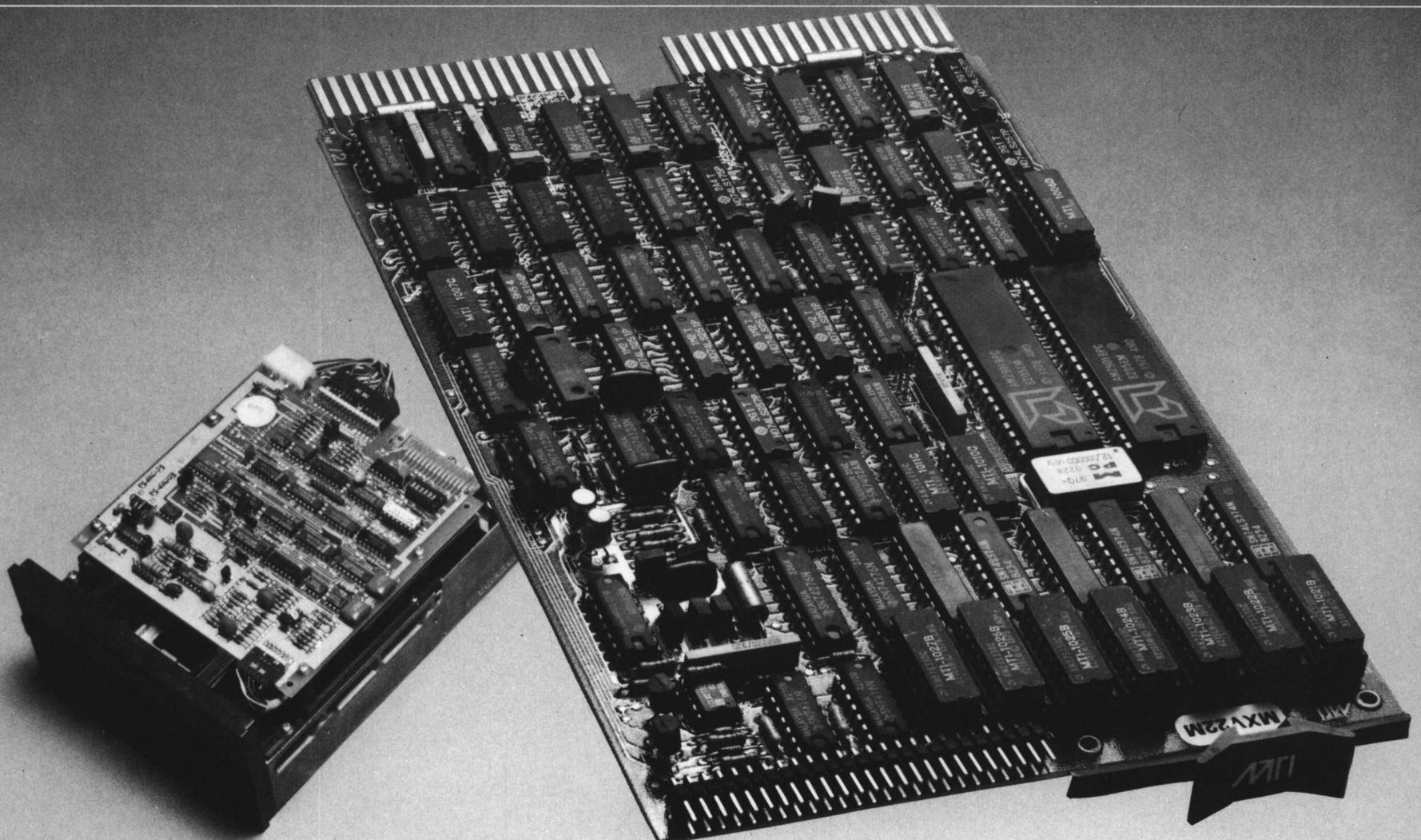


# DEC®RX02 COMPATIBLE 5¼" FLOPPY DISK CONTROLLER

# MXV22M



- All interface, bootstrap, and format electronics are contained on one dual-height card.
- DEC®RX02 hardware and software compatible.
- DEC®LSI-11, LSI-11/2, LSI-11/23 compatible.
- Operation on standard device address and interrupt vector.
- Four level device interrupt priority.
- Write precompensation and Augmented phase locked loop for improved data recovery.
- Power fail protection.
- Transparent Firmware Bootstrap.

Major advances in the data storage capacity and data recording techniques with 5¼-inch Mini-floppy disk drive technology have enabled MICRO TECHNOLOGY to successfully map the DEC®RX02 format onto a 5¼-inch double-sided double-density diskette.

The MXV22M is totally software and hardware compatible with the DEC®RX02 8-inch Floppy Disk Subsystem. The RX02 format is uniquely accomplished through the use of a 96 TPI double-sided double-density 5¼-inch Mini-floppy disk drive by recording thirteen sectors on side zero and thirteen sectors on side one on each of seventy-seven of the eighty cylinders available on the 5¼-inch diskette media. This mapping provides 974 blocks of data storage using RT-11 formats with each block containing 512 bytes of data.

The MXV22M was designed for LSI-11, LSI-11/2, and LSI-11/23 Micro Computer users. All circuitry is contained on one dual-height card which plugs directly into any standard LSI-11 backplane. And interfaces to the Tandon Model T100-4 or Shugart SA460 compatible Mini-floppy drive.

  
**Micro Technology, Inc.**  
THE KEY TO OPTIMUM STORAGE

**Bootstrap**

The bootstrap is initiated whenever program execution is started at location 173000<sub>8</sub>. Both drives are homed to track 0. Then track 1, sector 1 of unit 0 is read and diskette density is determined. If the diskette is single density, sectors 1, 3, 5 and 7 are loaded starting at location 0. If the diskette is double density, sectors 1 and 3 are loaded. Program execution is then transferred to location 0. This feature can be disabled by pin jumper at the user's option.

**Formatting**

The MXV22M provides two pass formatting which writes and checks sector headers prior to recording data fields. The data fields are recorded in either single or double density as defined by the user command. The formatted diskette is compatible with DEC®RX01, RX02 or IBM3740.

**Augmented Phase Locked Loop**

The MXV22M utilizes a proprietary design to very accurately read data from the recorded tracks. Having the speed to read each data bit, the 2901 Microprocessor has the ability to control the phase locked loop during the noisy areas of the format. By gating the phase locked loop on and off in-phase with the synchronized data stream, a shorter capture range for data lock-on and a higher data tracking factor can be achieved without sacrificing stability or suffering any loss of data reliability.

**Device Address/Interrupt Priority**

The MXV22M is shipped with the standard device address 177170<sub>8</sub>, interrupt vector 264<sub>8</sub> and interrupt priority level four. The alternate address and vector are selectable by pin jumpers. Other interrupt priority levels are selectable by jumpers.

**Power Failure Protection**

All drives exhibit the phenomenon of apparently time displacing recorded bits in certain bit patterns. Unless some provision is made to compensate for this effect, data retrieved from the disk may display a higher error rate. The MXV22M provides hardware write precompensation which reduces the apparent bit shift. This unique feature allows the controller to perform reliably with any Shugart compatible drive. For more detailed information refer to *Shugart Associates Application Bulletin—SA800 series diskette storage drive double density design guide*.

**Write Precompensation**

When the LSI-11 system signals an impending DC power failure, the MXV22M controller will no longer initiate a write sequence. However the controller has the capability to complete any sector currently being written.

**DRIVE INTERFACE**

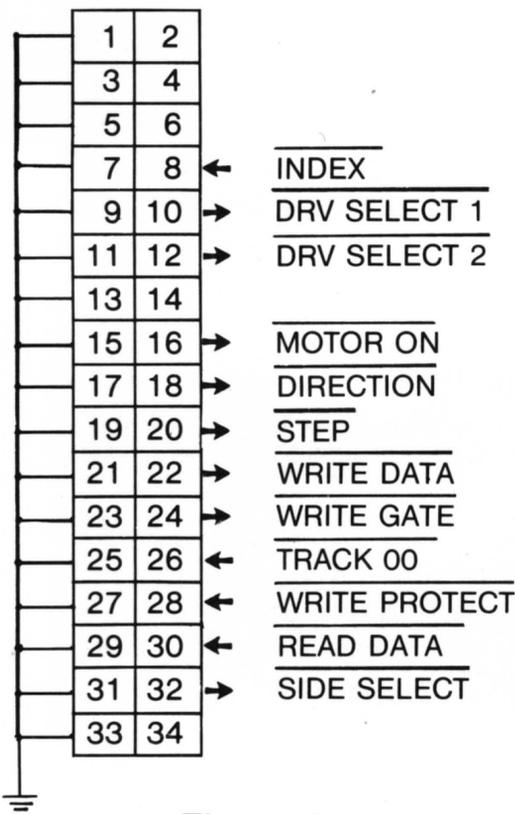


Figure 1

**REGISTER FORMATS**

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
ERROR	RX INIT	EXT ADDR	RX02			HEAD SEL	DEN	TR	INTR ENB	DONE	UNIT SEL	FUNCTION			GO

**MXVCS**

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

**MXVDB**

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
				NXM	WC OVFL	HEAD SEL	UNIT SEL	DRV RDY	DD	DRV DEN	DEN ERR	AC LO	ID	SIDE RDY	CRC

**MXVES**

**SPECIFICATIONS**

RECORDING TECHNIQUE	SINGLE DENSITY	IBM 3740 FM
	DOUBLE DENSITY	DEC MODIFIED MFM
POWER REQUIREMENTS	VOLTAGE	SINGLE 5V SUPPLY (from LSI-11 Back Plane)
	CURRENT	2.5 AMPS TYPICAL
OPERATING LIMITS	TEMPERATURE	0 - 45° C
	HUMIDITY	10% - 95% NON-CONDENSING