INTERDATA

1600 CPI

Magnetic Tape

- **45 IPS 9-Track**

- **Read-After-Write Check**

- **1600 CPI Recording Density**

- **ANSI Compatibility**

- **72,000 Bytes/Second Transfer Rate**

- **1 X 4 Controller**

GENERAL DESCRIPTION

The INTERDATA 9 TRACK 1600 CPI MAGNETIC TAPE SYSTEM is a low-cost, sequential access, bulk storage facility providing large system capability and compatibility for the INTERDATA family of computers. The tape transport is IBM code compatible, conforms to ANSI standards and has a data transfer rate of 72,000 characters per second. Simultaneous read or write and rewind are permitted in multiple transport configurations to minimize delays. Extensive hardware error checking by the interface and transport allows complete data transfer monitoring for use in error detection and recovery programs.

OPERATIONAL CHARACTERISTICS

The magnetic tape interface is capable of interfacing up to four read-after-write magnetic tape transports and contains the logic to provide error detection and status condition. Operation may be via block mode transfer over the multiplexor bus or high speed Selector Channel. Peak data transfer rates of 72,000 bytes per second are possible. Program control is exercised over various hardware functions including interrupt, read, write, file mark, rewind, skip file and clear operations. The interface is completely self-contained on a single 7-inch printed circuit board and employs the latest state of the art LSI techniques.

The interface responds to four different addresses, one assigned to each of the four possible tape transports. An interrupt from any one of the four transports is responded to by the proper interrupt address for the interrupting source.

The interrupt accepts commands and responds with specific transport status. Error status is provided for write overflow, read error during a write operation, single channel dropout, vertical parity error and false preamble/postamble detection.

Condition status is provided for file mark sense, load point sense, tape not in motion and end of record and device unavailable.

The phase encoded formatter is separately mounted in a 3½-inch high, 19-inch wide chassis and acts as the intermediary between the tape transport and the interface. The formatter contains all the logic for generation of preamble, postamble, phase encoded data, file mark patterns and recovery of read data to include error and file mark detection and error correction.

In addition, the formatter features precise timing circuitry for the generation of IBM compatible Inter-Block Gaps for correct head positioning between records, automatic recording of the phase mode identification burst prior to recording the first record on a tape, automatic testing and identification of the phase mode identification burst on a read operation and continuous status monitoring and recording.

The Tape Transport is a highly reliable unit having an error rate of one in 5×10^7 bytes transferred. This unit provides a tape speed of 45 inches per second in a forward direction and incorporates many "extras" to ensure IBM and ANSI compatibility as well as reliability and maintainability. Easily accessible "up-front" controls are provided for operator convenience and additional "inside" controls are provided for maintenance purposes.

Among the technological pluses of the transport are toggle action automatic reel seating hold-down hubs and automatic photo-electric controlled retracting buffer arms. Head and spring-loaded guide geometry are designed to minimize dynamic skew difficulties caused by normal tape edge irregularities. Constant tape tension is carefully controlled to maintain IBM standards and minimize tape reel interchange hazards that could arise from tape stretching or cinching.

The transport also employs a single capstan drive mechanism. This mechanism maintains a highly accurate tape speed by using a low-inertia, DC servo motor. The motor speed stability is the result of a highly-tuned analog-type velocity feedback network which causes immediate corrective response if an irregularity should be present.

Read-after-write and control electronics are housed in the transport. Write deskew is accomplished digitally by timing the data written to minimize gap scatter and other static and dynamic skew effects. Critical turn-on and turn-off of write and erase currents are expertly controlled to prevent spurious signals from being recorded.

FUNCTIONAL BLOCK DIAGRAM

Manual control is provided for load point, on/off line, rewind and power on/off. In addition, maintenance controls are conveniently located within the unit for forward, reverse and stop.

Complete software support is provided for the Magnetic Tape System in INTERDATA's versatile line of operating systems; including the Basic Operating Software System (BOSS), Disc Operating System (DOS) and Real Time Operating System (RTOS).
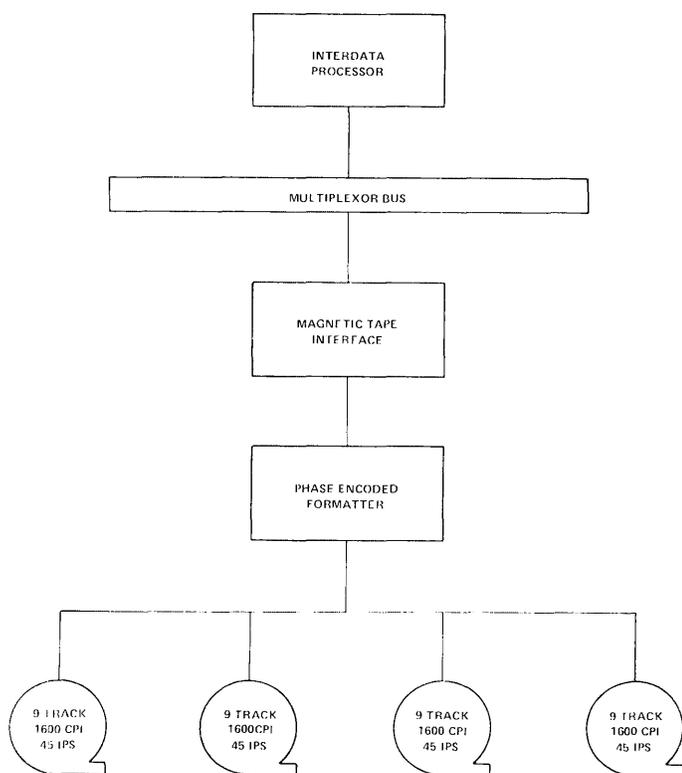
SPECIFICATIONS

INTERFACE

Power Requirements	+ 5 VDC, 1.5 amperes
Environmental	0 - 50˚ C operational -40˚ — -85˚ C storage 0 - 90% humidity (without condensation)
Dimensions	7" x 15" Printed Circuit Board
Weight	1.5 Pounds
Commands	Enable Interrupt Disable Interrupt Disarm Read Write Write File Mark Rewind Skip File Forward Skip File Reverse Clear
Record Size	Variable, 4 character minimum

TAPE TRANSPORT

Number of tracks	9
Tape Speed *Write*	45 inches per second synchronous
Rewind	200 inches per second
Instantaneous variation	± 3% (maximum)
Long Term variation	± 1% Forward, ± 3% Reverse
Start/Stop time (nominal)	8 milliseconds
Start/Stop distance (nominal)	.19 ± .02 inches

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Inter-record gap		.66 inch nominal
Recording mode		9 Track, phase coded, IBM and ANSI compatible.
Recording Head		Magnetic dual gap with erase head
Packing Density		1600 characters per inch
Tape Format		IBM Compatible
Transfer rate		72,000 bytes per second maximum
Type of reel		Hub mounting, 10½″ diameter
Tape capacity		2400 feet, 0.5 inch wide, 1.5 mil thick.
Error checks		Hardware Read-after-write
Error rate		1 error in 5 x 10⁷ bytes transferred
Environmental		2 - 50 C operational 15 - 95% Relative humidity (without condensation)
BOT-EOT Detection		Photo-electric IBM compatible
Dimensions	(MTU)	24.5 inches high 19 inches wide 16.5 inches deep (13 inches deep from mounting surface)
	(Formatter)	3.5 inches high 19 inches wide 20 inches deep
Weight	(MTU)	85 pounds
	(Formatter)	25 pounds
Power	(MTU)	115/230 VAC, single phase 300 Watts 48 - 400 HZ
	(Formatter)	115/230 VAC, single phase 100 Watts 48 - 400 HZ

Note: The Error rate reads "1 error in 5 x 10^7 bytes transferred" and the Environmental operational range.

TAPE FORMAT

INTERDATA PRODUCT NUMBERS

M46-475 Magnetic Tape Transport Interface. Interface handles up to four 1600 cpi Tape Transports. Includes phase encoded formatter interface logic and Read-After-Write Check. Interface is one 7″ board.

M46-465 Magnetic Tape Transport without interface. IBM compatible 9-track drive, 1600 cpi 45 ips, Read-After-Write. Includes phase encoded formatter and device cable. For 115 VAC 50/60 Hz operation.

M46-466 Magnetic Tape Transport without interface. IBM compatible 9-track drive, 1600 cpi, 45 ips, Read-After-Write. Includes phase encoded formatter and device cable. For 230 VAC 50/60 Hz operation.

M46-467 Magnetic Tape Transport, IBM compatible, 9-track, 1600 cpi, 45 ips for expansion, includes device cable. For 115 VAC, 50/60 Hz operations.

M46-468 Magnetic Tape Transport, IBM compatible, 9-track 1600 cpi, 45 ips for expansion, includes device cable. For 230 VAC, 50/60 Hz operations.

NOTE: The Magnetic Tape Transport may be mounted in the M49-004 System Cabinet which is optionally available.
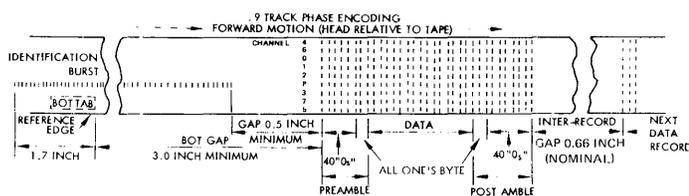
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