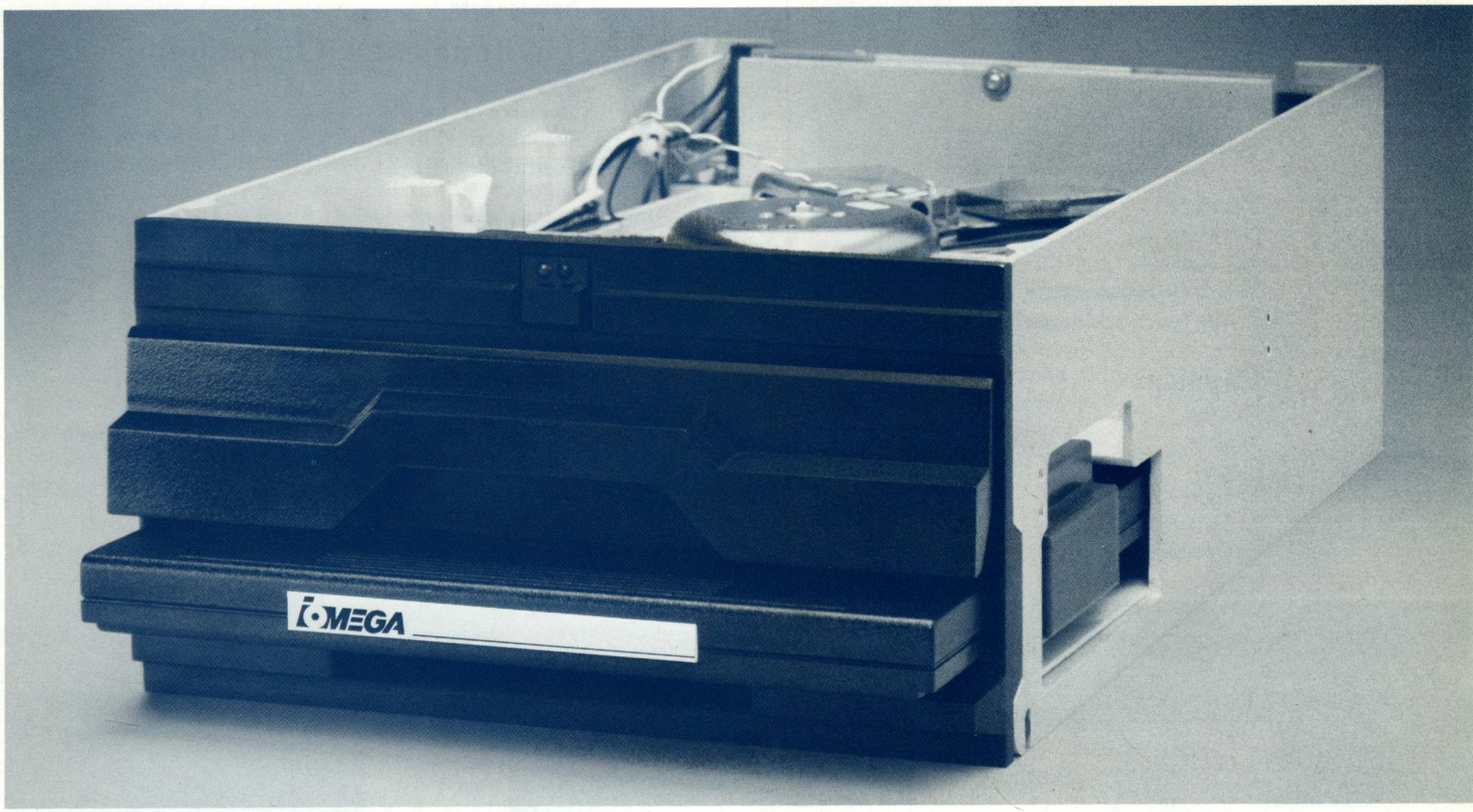
iOMEGA™




# Alpha-10™

Highest performance and reliability of any Removable Disk Drive • Lowest-cost 10 megabyte Disk Cartridge • More resistant to shock and vibration than any other Fixed or Removable Disk Drive • More resistant to contamination than any other Removable Disk Drive • Fastest start/stop (cartridge replacement) time of any high performance Disk Drive • Only Disk Cartridge Subsystem (drive, controller and cartridge) to dimensionally conform to the diskette standard (size and mounting)

# Disk Drive Subsystem Specifications

## Performance

**Data Transfer Rate**

| | |
|---|---|
| Drive to Controller | 1.13 Mbytes/sec |
| Controller to Host | |
| Single Record Burst (256 bytes) | 1.13 Mbytes/sec |
| Contiguous Records (same track) | 896 Kbytes/sec |

**Seek Time** (including settling time)

| | |
|---|---|
| Minimum | 10 msec |
| Average | 35 msec |
| Maximum | 75 msec |
| **Latency** | 20 msec |
| **Track to Track Access Time,** consecutive records over track boundary | 10.3 msec |
| **Start/Stop Time** | 4/5 sec |

## Power

| | |
|---|---|
| DC Voltages | +5, ± 12 |
| AC Voltages | None |
| Power (first drive with LSI controller) | 45 watts |
| Power (each additional drive) | 10 watts |

## Physical

| | | |
|---|---|---|
| Height | 114.3 mm | 4.50 in |
| Width | 217.0 mm | 8.54 in |
| Depth | 364.0 mm | 14.33 in |
| Weight | | |
| Drive | 5.13 kg | 11.3 lb |
| Controller | .73 kg | 1.6 lb |

## Reliability

**Error Rates**

| | |
|---|---|
| Data | |
| Recoverable | $10^{10}$ |
| Non-Recoverable at Host Interface with ECC | $>10^{12}$ |
| **Seek** | $10^{6}$ |
| **MTBF,** Drive | 18,000 hours |
| **MTBF,** Controller | 12,000 hours |
| **MTTR** | .5 hours |
| **Service Life** | 5 years |

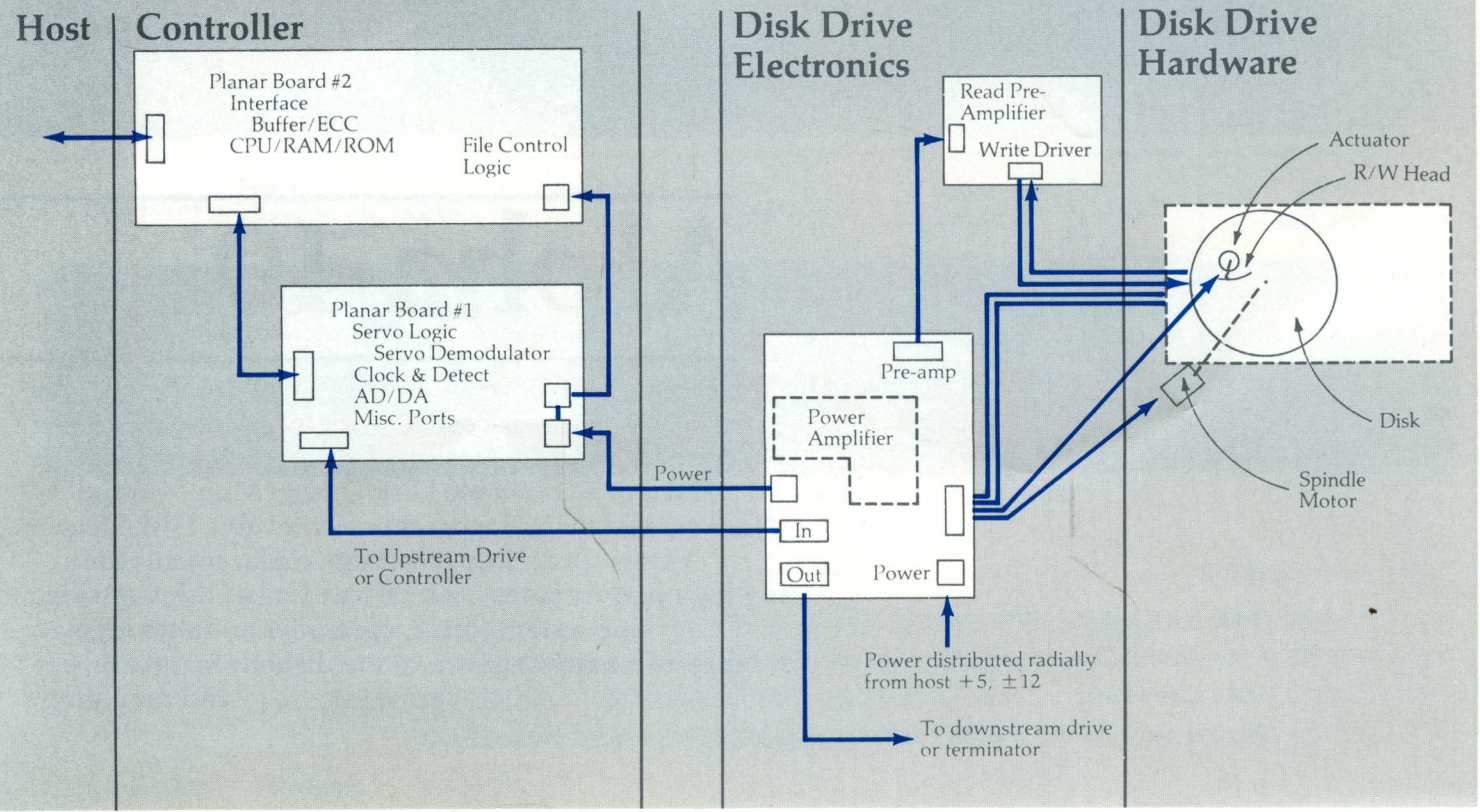
## Environmental (Operating)

| | | |
|---|---|---|
| Temperature | 10°C–46°C | 50°F–115°F |
| Relative Humidity (non-condensing) | | 10%–80% |
| Maximum Wet Bulb | 26.6°C | 80°F |
| Altitude | | to 3048m (10,000 ft) |
| Shock | | 3 g's for 20 msec |
| Vibration | | |
| .85 g's at 5 to 17 Hz | | |
| .25 g's at 17 to 500 Hz | | |

## Functional

| | |
|---|---|
| Rotational Speed | 1500 RPM ± .5% |
| Encoding Method | RLLC |
| Recording Density | 24,000 BPI |
| Flux Density | 18,000 FCI |
| Track Density | 300 TPI |
| Disks—Removable | 1 |
| Fixed | 0 |
| Recording Surfaces | 1 |

## Disk Subsystem Architecture



# Host Interface Specifications

## Control Lines

Physical interface contains an 8 bit bi-directional data bus, a parity bit, and 8 control lines:

**Busy (BSY)** Assertion by the controller indicates the controller is busy and cannot be interrupted.

**Acknowledge (ACK)** Assertion by the host indicates each data byte on the bus has either been received by the host (read operation) or is ready to be received by the controller (write operation).

**Reset (RST)** Assertion by the host causes all operations in the controller to cease. If asserted during a write operation, written data on the disk will be incorrect and the ECC sector will not be updated. The controller must be reselected if further commands are to be issued.

**Message (MSG)** assertion by the controller indicates the current operation is complete. This signal is accompanied by a REQ-ACK handshake, but the data signals on the bus have no significance. When the handshake is complete, the controller will deassert all control lines and return to an idle state.

**Select (SEL)** Assertion by the host along with the controller address bit on the data bus causes the desired controller to be selected. The line is de-asserted when the controller responds with "Busy."

**Command/Data (C/D)** Assertion by the controller indicates that command or status information is on the bus. De-assertion indicates data is on the bus.

**Request (REQ)** assertion by the controller on a host-to-controller transfer indicates that the controller is ready to receive data and the deassertion indicates receipt of data. For a controller-to-host transfer, assertion indicates the presence of data on the bus. The host must respond with ACK within 256 μsec or the operation will be terminated.

**Input/Output (I/O)** Assertion by the controller indicates data transfer from controller to host; deassertion indicates transfer of information from host to controller.

## Command Menu

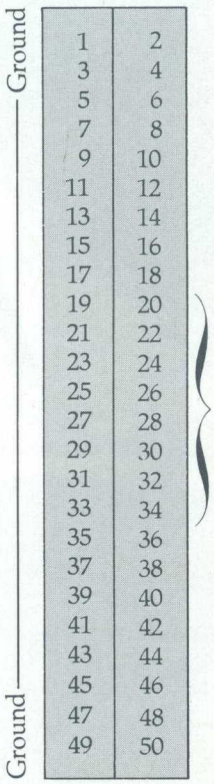
Class 0 (no data transfer)
- Format "Z" Track
- Flag Sector
- Flag Track
- Unflag Tracks
- Seek
- Home
- Request Status
- Request Extended Status
- Test Controller Status
- Host Write Protect

Class 1 (data transfer, drive to host)
- Read Data
- Read ID
- Read Data with Offset
- Diagnostic Read

Class 2 (data transfer, host to drive)
- Write Data
- Write ID
- Resequence ID Fields
- Diagnostic Write

## Hardware Interface

The interface is a 50 pin, general purpose, DMA structure as follows:



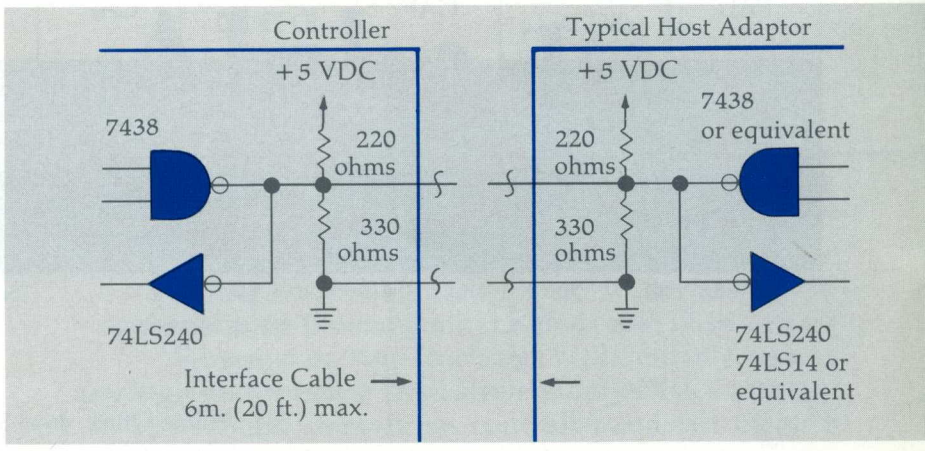

**Data Lines** (Bi-Directional)
Data 0 (least significant bit)
Data 1
Data 2
Data 3
Data 4
Data 5
Data 6
Data 7 (most significant bit)
Data 8 (parity bit-odd)

Spare

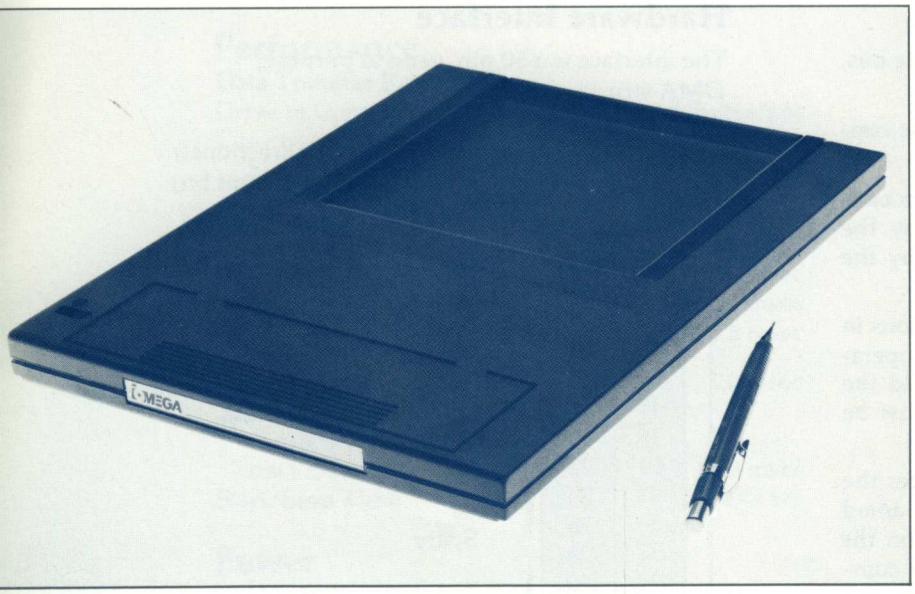
**Control Lines**

| | |
|---|---|
| Busy | BSY |
| Acknowledge | ACK |
| Reset | RST |
| Message | MSG |
| Select | SEL |
| Command/Data | C/D |
| Request | REQ |
| Input/Output | I/O |

All signals TTL negative true (0-0.4 VDC)
positive false (2.5-5.25 VDC)
Assertion = true
Maximum Cable Length = 6 meters
Recommended mating connector: 3M 3425-6050
Electrical Interface:



# 10 Megabyte Removable Cartridge




## Cartridge Size

| | | |
|---|---|---|
| Height | 0.71 in | 18.0 mm |
| Width | 8.23 in | 209.0 mm |
| Depth | 11.02 in | 280.0 mm |
| Weight | 1.30 lbs | 0.59 kg |

## Flexible Disk Dimensions

| | |
|---|---|
| Outside Diameter | 198.0 mm |
| Inside Diameter | 17.0 mm |
| Disk Thickness | 3.0 Mils |

## Surface Format

| | |
|---|---|
| Outer Guard Bands | 16 |
| Data Tracks | 306 |
| "Z" Track | 1 |
| Spare Tracks for Field Flagging | 4 |
| Inner Guard Bands | 16 |
| Total | 343 |

## Capacity

| | |
|---|---|
| Formatted | 10.03 Megabytes |
| Unformatted | 14.11 Megabytes |

## Configuration

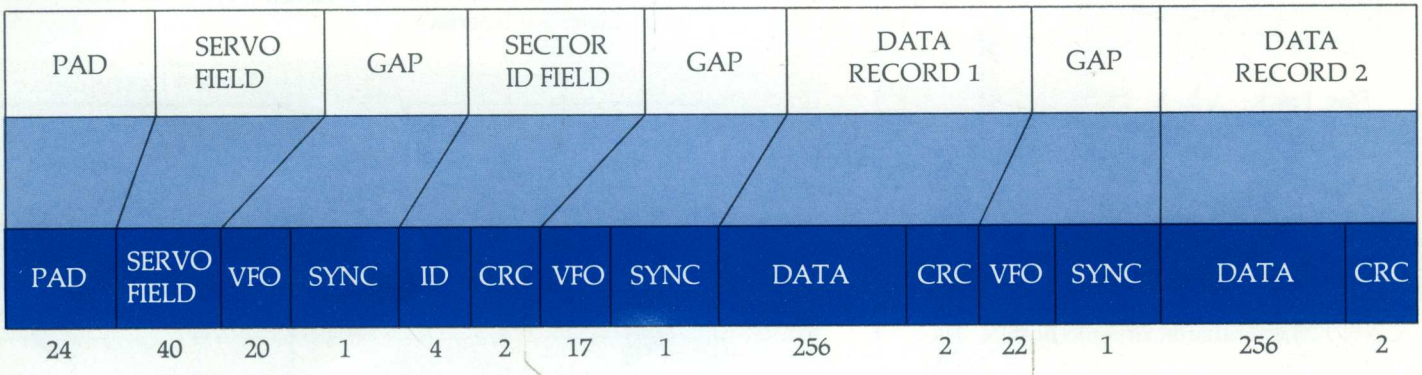
| | |
|---|---|
| Drives Per Controller | 1 to 4 |
| Cartridges per Drive | 1 |
| Flexible Disks per Cartridges | 1 |
| Recording Surfaces per Flexible Disk | 1 |
| Formatted (User-available) Tracks per Surface | 306 |
| Formatted (User-available) Sectors per Track | 64 |
| Records per Sector | 2 |
| Bytes per Record | 256 |

## Track Format

| | |
|---|---|
| Servo Sectors | 70 |
| Data Sectors | 64 |
| ECC Sectors | 1 |
| Spare Sectors, min/max.* | 3/5 |
| Records/Sector | 2 |
| Bytes/Data Record | 256 |
| Bytes/Sector | 512 |
| Bytes/Track (unformatted) | 45,360 |
| Bytes/Track (User Available) | 32,768 |

*For field flagging

## Sector Format/648 Bytes

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