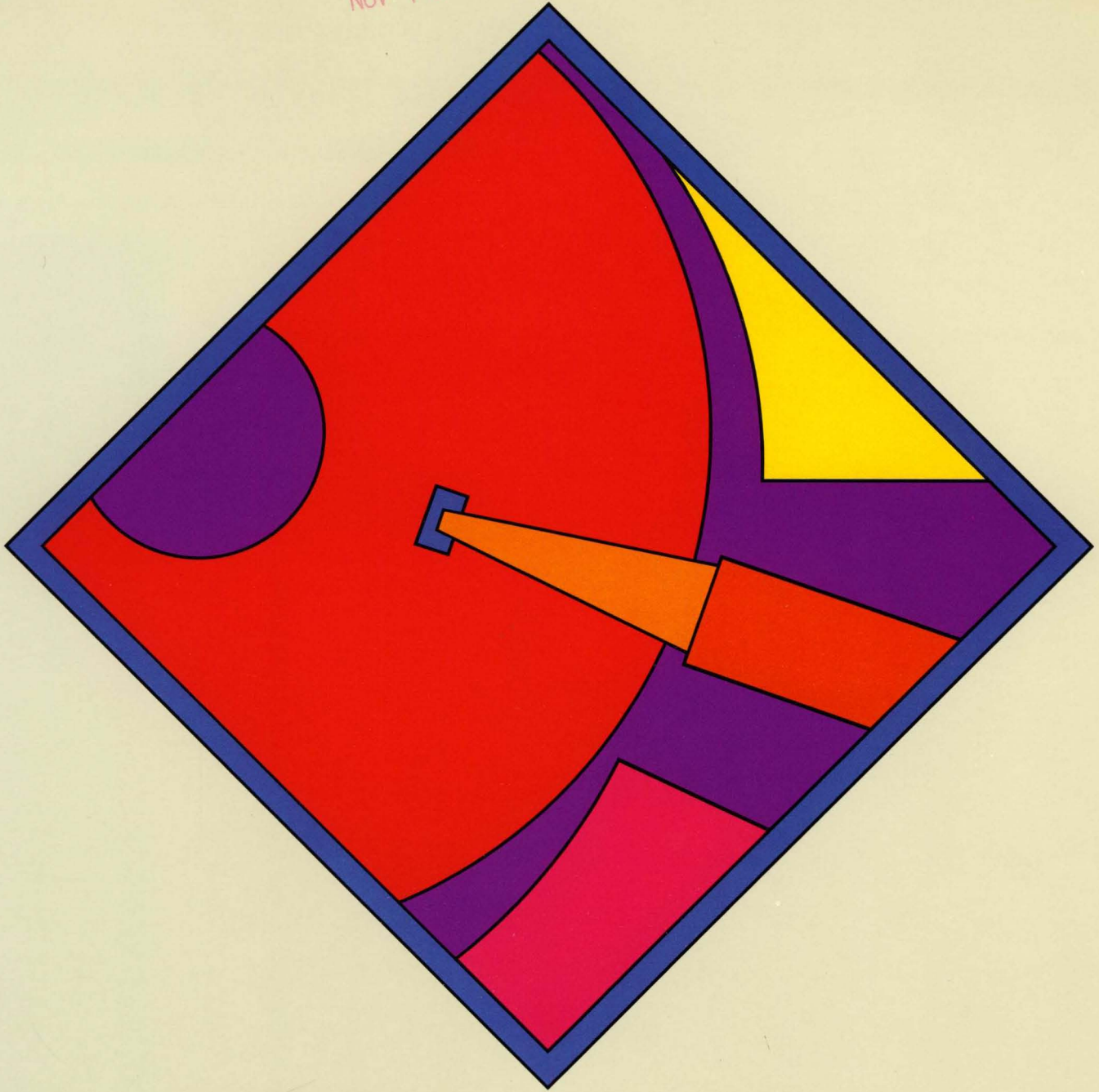
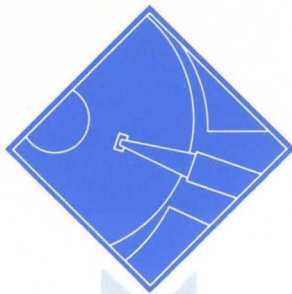


NOV 16 1988



Winchester Disk Drive Product Selection Guide

 TM **Microscience** TM
One Step Ahead



High Performance 3.5 inch Specifications



3.5 inch High Performance Hard Disk Drive

- ◆ 40 Mbyte to 100 Mbyte capacities
- ◆ Industry standard interfaces
 - ST506 — SCSI
 - ESDI — AT
- ◆ Closed-loop dedicated servo
- ◆ 18 milliseconds average access
- ◆ 36,000 POH, MTBF
- ◆ Low power consumption
- ◆ Dedicated landing zone
- ◆ Spindle brake
- ◆ Actuator lock

Capacity Unformatted

Per drive
Per surface
Per track

Capacity Formatted

Per drive
Per surface
Per track
Per sector
Sectors per track

Data Transfer Rate

Average Latency

Seek Time (incl. settling)

Track to track
Average
Maximum

Functional Specifications

Rotational speed
Recording density
Flux density
Track density
Cylinders per head
Cylinders per surface
Read Write tracks
Platters
Read Write heads
Recording code

Interface

Reliability Specifications

MTBF (typical usage)
Preventive maintenance
Component life
Error rates

- Soft read errors
- Hard read errors
- Seek errors

Power Requirements

DC voltage

Power dissipation

Environmental Limits (operating)

Ambient temperature
Relative humidity
Wet bulb, maximum
Altitude
Vibration

Shock

Environmental Limits (non-operating)

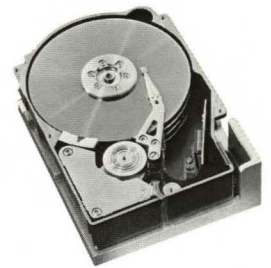
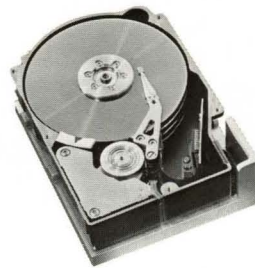
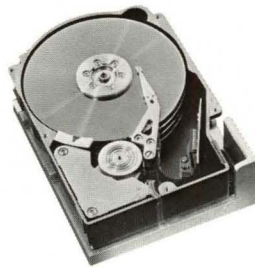
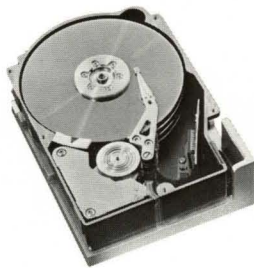
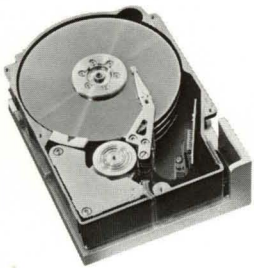
Ambient temperature
Relative humidity
Wet bulb, maximum
Altitude
Vibration

Shock

Mechanical Dimensions

Height
Width
Length
Weight

Safety Approvals



4050	5100	6100	7040	7100
53.3 Mbytes 10.6 Mbytes 10,416 bytes	124.6 Mbytes 17.8 Mbytes 20,832 bytes	124.6 Mbytes 17.8 Mbytes 20,832 bytes	53.4 Mbytes 17.8 Mbytes 20,832 bytes	124.6 Mbytes 17.8 Mbytes 20,832 bytes
44.5 Mbytes 8.9 Mbytes 8,704 bytes 512 bytes 17	110.3 Mbytes 15.7 Mbytes 18,432 bytes 512 bytes 36	110.3 Mbytes 15.7 Mbytes 18,432 bytes 512 bytes 36	47.2 Mbytes 15.7 Mbytes 18,432 bytes 512 bytes 36	110.3 Mbytes 15.7 Mbytes 18,432 bytes 512 bytes 36
625 kbytes/s (5 Mb/s)	1,250 kbytes/s (10 Mb/s)	1,250 kbytes/s (10 Mb/s)	1,250 kbytes/s (10 Mb/s)	1,250 kbytes/s (10 Mb/s)
8.33 ms	8.33 ms	8.33 ms	8.33 ms	8.33 ms
4 ms 18 ms 40 ms	5 ms 18 ms 40 ms	4 ms 18 ms 40 ms	4 ms 18 ms 40 ms	4 ms 18 ms 40 ms
3,600 rpm \pm 0.1% 14,445 bpi 14,445 fci 1,250 tpi 1,024 1,024 5,120 3 5 MFM	3,600 rpm \pm 0.1% 25,406 bpi 16,937 fci 1,250 tpi 855 855 5,985 4 7 RLL (2,7)	3,600 rpm \pm 0.1% 25,406 bpi 16,937 fci 1,250 tpi 855 855 5,985 4 7 RLL (2,7)	3,600 rpm \pm 0.1% 25,406 bpi 16,937 fci 1,250 tpi 855 855 2,565 2 3 RLL (2,7)	3,600 rpm \pm 0.1% 25,406 bpi 16,937 fci 1,250 tpi 855 855 5,985 4 7 RLL (2,7)
ST506/412	ESDI	SCSI	AT	AT
36,000 poh none 5 years	36,000 poh none 5 years	36,000 poh none 5 years	36,000 poh none 5 years	36,000 poh none 5 years
1 in 10^{10} bit read 1 in 10^{12} bit read 1 in 10^6 seeks	1 in 10^{10} bit read 1 in 10^{12} bit read 1 in 10^6 seeks	1 in 10^{10} bit read 1 in 10^{12} bit read 1 in 10^6 seeks	1 in 10^{10} bit read 1 in 10^{12} bit read 1 in 10^6 seeks	1 in 10^{10} bit read 1 in 10^{12} bit read 1 in 10^6 seeks
+12 volts \pm 5% @ 0.6A typ. 1.5A starting +5 volts \pm 5% @ 0.5A typ. 10 watts typ.	+12 volts \pm 5% @ 0.7A typ. 1.5A starting +5 volts \pm 5% @ 0.5A typ. 10 watts typ.	+12 volts \pm 5% @ 0.6A typ. 1.5A starting +5 volts \pm 5% @ 0.5A typ. 11 watts typ.	+12 volts \pm 5% @ 0.5A typ. 1.5A starting +5 volts \pm 5% @ 0.5A typ. 9 watts typ.	+12 volts \pm 5% @ 0.7A typ. 1.5A starting +5 volts \pm 5% @ 0.5A typ. 11 watts typ.
40° to 122°F (5° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 10,000 ft. 5 to 500 Hz 1.0 G 10 G, 11 ms	40° to 122°F (5° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 10,000 ft. 5 to 500 Hz 1.0 G 10 G, 11 ms	40° to 122°F (5° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 10,000 ft. 5 to 500 Hz 1.0 G 10 G, 11 ms	40° to 122°F (5° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 10,000 ft. 5 to 500 Hz 1.0 G 10 G, 11 ms	40° to 122°F (5° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 10,000 ft. 5 to 500 Hz 1.0 G 10 G, 11 ms
-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 500 Hz 2.0 G 75 G, 11 ms	-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 500 Hz 2.0 G 75 G, 11 ms	-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 500 Hz 2.0 G 75 G, 11 ms	-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 500 Hz 2.0 G 75 G, 11 ms	-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 500 Hz 2.0 G 75 G, 11 ms
1.625 in. 4.000 in. 5.750 in. 2.0 lb.	1.625 in. 4.000 in. 5.750 in. 2.0 lb.	1.625 in. 4.000 in. 5.750 in. 2.0 lb.	1.625 in. 4.000 in. 5.750 in. 2.0 lb.	1.625 in. 4.000 in. 5.750 in. 2.0 lb.
Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.

**S**

pecific Microscience drives, the best combination of speed, reliability, capacity and low power use.

Our reputation as innovators got started when we developed the first half-height Winchester drive. And this reputation continues to grow as we apply media, head, motor, actuator and other technologies a good step ahead of other manufacturers. We were the first company to engineer voice-coil motors for the half-height form, an accomplishment that led to higher capacities and access speeds. We led the way in adopting reliable closed-loop servo positioning. And we pioneered the use of plated thin-film media for half-heights.

The engineering, manufacturing, and service strength you need to stay a step ahead are all here. Contact Microscience or your nearest representative or distributor for the industry's most innovative storage solutions.

Strengths that Put You Ahead

Top Performance

- ◆ Low power consumption — expanded capacity without power supply upgrade costs
- ◆ Voice-coil technology for faster access times
- ◆ ST506/412, SCSI, ESDI, AT choices for the system integration solution that suits you best
- ◆ Single microprocessor control for increased interface control versatility
- ◆ Half-height 5.25 inch and 3.5 inch to choose from

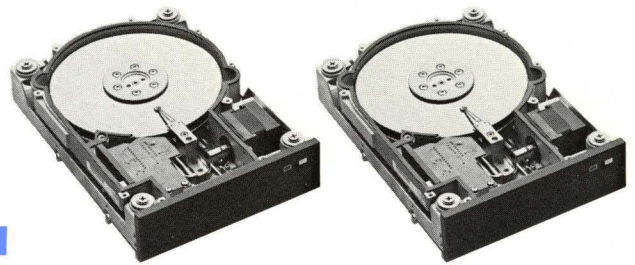
Reliability

- ◆ Higher MTBF
- ◆ Closed-loop servo system to keep heads precisely on track
- ◆ Single printed circuit board and VLSI circuitry for lower heat generation
- ◆ Self diagnostics
- ◆ Dedicated head-landing zone
- ◆ No preventive maintenance

Quality Based on Proven Designs

- ◆ Extensive burn-in testing
- ◆ Advanced design head suspension
- ◆ Brushless DC motors
- ◆ High-efficiency air filtration system
- ◆ High-stability actuator designs

Standard Performance Half-Height 5.25 inch Specifications



Half-Height 5.25 inch Family Standard performance (XT class) and high performance drives

Top: 1090 Series (see next page)

Middle: 800 Series (this page)

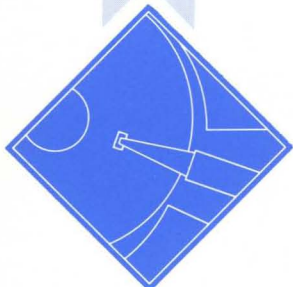
Bottom: 1050 Series (next page)

	HH-825	HH-830
Capacity Unformatted		
Per drive	25.52 Mbytes	38.28 Mbytes
Per surface	6.38 Mbytes	9.57 Mbytes
Per track	10,416 bytes	15,624 bytes
Capacity Formatted		
Per drive	21.31 Mbytes	31.30 Mbytes
Per surface	5.33 Mbytes	7.80 Mbytes
Per track	8,704 bytes	12,800 bytes
Per sector	512 bytes	512 bytes
Sectors per track	17	25
Data Transfer Rate	625 kbytes/s (5 Mb/s)	937.5 kbytes/s (7.5 Mb/s)
Average Latency	8.45 ms	8.45 ms
Seek Time (incl. settling)		
Track to track	35 ms	35 ms
Average	65 ms	65 ms
Maximum	130 ms	130 ms
Functional Specifications		
Rotational speed	3,550 rpm \pm 0.1%	3,550 rpm \pm 0.1%
Recording density	9,680 bpi	14,520 bpi
Flux density	9,680 fci	9,680 fci
Track density	648 tpi	648 tpi
Cylinders per head	615	615
Cylinders per surface	615	615
Read Write tracks	2,460	2,460
Platters	2	2
Read Write heads	4	4
Recording code	MFM	RLL
Interface	ST506/412	ST506/412
Reliability Specifications		
MTBF (typical usage)	20,000 poh	20,000 poh
Preventive maintenance	none	none
Component life	5 years	5 years
Error rates		
Soft read errors	1 in 10^{10} bit read	1 in 10^{10} bit read
Hard read errors	1 in 10^{12} bit read	1 in 10^{12} bit read
Seek errors	1 in 10^6 seeks	1 in 10^6 seeks
Power Requirements		
DC voltage	+12 volts \pm 5% @ 0.6A typ. 1.5A starting	+12 volts \pm 5% @ 0.6A typ. 1.5A starting
	+5 volts \pm 5% @ 0.7A typ.	+5 volts \pm 5% @ 0.7A typ.
Power dissipation	11 watts typ.	11 watts typ.
Environmental Limits (operating)		
Ambient temperature	40° to 122°F (5° to 50°C)	40° to 122°F (5° to 50°C)
Relative humidity	8% to 80% non-condensing	8% to 80% non-condensing
Wet bulb, maximum	78°F non-condensing (25.5°C)	78°F non-condensing (25.5°C)
Altitude	0 to 25,000 ft.	0 to 25,000 ft.
Vibration	5 to 60 Hz, .006 in. p-p 60 to 500 Hz, .35 G pk 10 G, 11 ms	5 to 60 Hz, .006 in. p-p 60 to 500 Hz, .35 G pk 10 G, 11 ms
Shock		
Environmental Limits (non-operating)		
Ambient temperature	-40° to 140°F (-40° to 60°C)	-40° to 140°F (-40° to 60°C)
Relative humidity	8% to 80% non-condensing	8% to 80% non-condensing
Wet bulb, maximum	78°F non-condensing (25.5°C)	78°F non-condensing (25.5°C)
Altitude	0 to 40,000 ft.	0 to 40,000 ft.
Vibration	5 to 30 Hz, .047 in. p-p 30 to 500 Hz, 0.5 G pk 40 G, 11 ms	5 to 30 Hz, .047 in. p-p 30 to 500 Hz, 0.5 G pk 40 G, 11 ms
Shock		
Mechanical Dimensions		
Height	1.625 in.	1.625 in.
Width	5.750 in.	5.750 in.
Length	8.000 in.	8.000 in.
Weight	3.0 lb.	3.0 lb.
Safety Approvals	Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.

High Performance Half-Height 5.25 inch Specifications



	HH-1050	HH-1060	HH-1075
Capacity Unformatted			
Per drive	53.33 Mbytes	80.00 Mbytes	74.69 Mbytes
Per surface	10.67 Mbytes	16.00 Mbytes	10.67 Mbytes
Per track	10,416 bytes	15,624 bytes	10,416 bytes
Capacity Formatted			
Per drive	44.56 Mbytes	65.50 Mbytes	62.37 Mbytes
Per surface	8.91 Mbytes	13.10 Mbytes	8.91 Mbytes
Per track	8,704 bytes	12,800 bytes	8,704 bytes
Per sector	512 bytes	512 bytes	512 bytes
Sectors per track	17	25	17
Data Transfer Rate	625 kbytes/s (5 Mb/s)	937.5 kbytes/s (7.5 Mb/s)	625 kbytes/s (5 Mb/s)
Average Latency	8.33 ms	8.33 ms	8.33 ms
Seek Time (incl. settling)			
Track to track	5 ms	5 ms	5 ms
Average	28 ms	28 ms	28 ms
Maximum	60 ms	60 ms	56 ms
Functional Specifications			
Rotational speed	3,600 rpm \pm 0.1%	3,600 rpm \pm 0.1%	3,600 rpm \pm 0.1%
Recording density	9,957 bpi	14,936 bpi	8,464 bpi
Flux density	9,957 fci	9,957 fci	8,464 fci
Track density	960 tpi	960 tpi	1,250 tpi
Cylinders per head	1,024	1,024	1,024
Cylinders per surface	1,024	1,024	1,024
Read Write tracks	5,120	5,120	7,168
Platters	3	3	4
Read Write heads	5	5	7
Recording code	MFM	RLL	MFM
Interface	ST506/412	ST506/412	ST506/412
Reliability Specifications			
MTBF (typical usage)	40,000 poh	40,000 poh	40,000 poh
Preventive maintenance	none	none	none
Component life	5 years	5 years	5 years
Error rates			
Soft read errors	1 in 10^{10} bit read	1 in 10^{10} bit read	1 in 10^{10} bit read
Hard read errors	1 in 10^{12} bit read	1 in 10^{12} bit read	1 in 10^{12} bit read
Seek errors	1 in 10^6 seeks	1 in 10^6 seeks	1 in 10^6 seeks
Power Requirements			
DC voltage	+12 volts \pm 5% @ 0.8A typ. 2.3A starting	+12 volts \pm 5% @ 0.8A typ. 2.3A starting	+12 volts \pm 5% @ 0.7A typ. 1.6A starting
	+5 volts \pm 5% @ 0.8A typ.	+5 volts \pm 5% @ 0.8A typ.	+5 volts \pm 5% @ 0.5A typ.
Power dissipation	14 watts typ.	14 watts typ.	11 watts typ.
Environmental Limits (operating)			
Ambient temperature	50° to 122°F (10° to 50°C)	50° to 122°F (10° to 50°C)	50° to 122°F (10° to 50°C)
Relative humidity	8% to 80% non-condensing	8% to 80% non-condensing	8% to 80% non-condensing
Wet bulb, maximum	78°F non-condensing (25.5°C)	78°F non-condensing (25.5°C)	78°F non-condensing (25.5°C)
Altitude	0 to 25,000 ft.	0 to 25,000 ft.	-1,000 to 25,000 ft.
Vibration	5 to 13.77 Hz, .036 in. p-p 13.77 to 500 Hz, .35 G pk	5 to 13.77 Hz, .036 in. p-p 13.77 to 500 Hz, .35 G pk	5 to 13.77 Hz, .036 in. p-p 13.77 to 500 Hz, .35 G pk
Shock	10 G, 11 ms	10 G, 11 ms	10 G, 11 ms
Environmental Limits (non-operating)			
Ambient temperature	-40° to 140°F (-40° to 60°C)	-40° to 140°F (-40° to 60°C)	-40° to 140°F (-40° to 60°C)
Relative humidity	8% to 80% non-condensing	8% to 80% non-condensing	8% to 80% non-condensing
Wet bulb, maximum	78°F non-condensing (25.5°C)	78°F non-condensing (25.5°C)	78°F non-condensing (25.5°C)
Altitude	0 to 40,000 ft.	0 to 40,000 ft.	-1,000 to 40,000 ft.
Vibration	5 to 14.77 Hz, .047 in. p-p 14.77 to 500 Hz, .5 G pk	5 to 14.77 Hz, .047 in. p-p 14.77 to 500 Hz, .5 G pk	5 to 14.77 Hz, .047 in. p-p 14.77 to 500 Hz, .5 G pk
Shock	40 G, 11 ms	40 G, 11 ms	40 G, 11 ms
Mechanical Dimensions			
Height	1.625 in.	1.625 in.	1.625 in.
Width	5.750 in.	5.750 in.	5.750 in.
Length	8.000 in.	8.000 in.	8.000 in.
Weight	4.4 lb.	4.4 lb.	4.4 lb.
Safety Approvals	Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.





HH-1090	HH-1095	HH-1120	HH-2120	HH-3120
95.76 Mbytes 13.68 Mbytes 10,416 bytes	112.00 Mbytes 16.00 Mbytes 15,624 bytes	143.71 Mbytes 20.53 Mbytes 15,624 bytes	149.3 Mbytes 21.3 Mbytes 20,832 bytes	143.7 Mbytes 20.53 Mbytes 15,624 bytes
80.08 Mbytes 11.44 Mbytes 8,704 bytes 512 bytes 17	95.41 Mbytes 13.63 Mbytes 13,312 bytes 512 bytes 26	122.43 Mbytes 17.49 Mbytes 13,312 bytes 512 bytes 26	121.1 Mbytes 17.3 Mbytes 16,896 bytes 512 bytes 33	122.43 Mbytes 17.49 Mbytes 13,312 bytes 512 bytes 26
625 kbytes/s (5 Mb/s)	937.5 kbytes/s (7.5 Mb/s)	937.5 kbytes/s (7.5 Mb/s)	1,250 kbytes/s (10 Mb/s)	937.5 kbytes/s (7.5 Mb/s)
8.33 ms	8.33 ms	8.33 ms	8.33 ms	8.33 ms
5 ms 28 ms 60 ms	5 ms 28 ms 56 ms	5 ms 28 ms 60 ms	5 ms 28 ms 60 ms	5 ms 28 ms 60 ms
3,600 rpm \pm 0.1% 9,840 bpi 9,840 fci 1,250 tpi 1,314 1,314 9,198 4 7 MFM	3,600 rpm \pm 0.1% 12,696 bpi 8,464 fci 1,250 tpi 1,024 1,024 7,168 4 7 RLL	3,600 rpm \pm 0.1% 14,760 bpi 9,840 fci 1,250 tpi 1,314 1,314 9,198 4 7 RLL	3,600 rpm \pm 0.1% 16,969 bpi 11,313 fci 1,250 tpi 1,024 1,024 7,168 4 7 RLL	3,600 rpm \pm 0.1% 14,760 bpi 9,840 fci 1,250 tpi 1,314 1,314 9,198 4 7 RLL
ST506/412	ST506/412	ST506/412	ESDI	SCSI
40,000 poh none 5 years	40,000 poh none 5 years	40,000 poh none 5 years	40,000 poh none 5 years	40,000 poh none 5 years
1 in 10 ¹⁰ bit read 1 in 10 ¹² bit read 1 in 10 ⁶ seeks	1 in 10 ¹⁰ bit read 1 in 10 ¹² bit read 1 in 10 ⁶ seeks	1 in 10 ¹⁰ bit read 1 in 10 ¹² bit read 1 in 10 ⁶ seeks	1 in 10 ¹⁰ bit read 1 in 10 ¹² bit read 1 in 10 ⁶ seeks	1 in 10 ¹⁰ bit read 1 in 10 ¹² bit read 1 in 10 ⁶ seeks
+12 volts \pm 5% @ 0.7A typ. 1.6A starting +5 volts \pm 5% @ 0.5A typ. 11 watts typ.	+12 volts \pm 5% @ 0.7A typ. 1.6A starting +5 volts \pm 5% @ 0.5A typ. 11 watts typ.	+12 volts \pm 5% @ 0.7A typ. 1.6A starting +5 volts \pm 5% @ 0.5A typ. 11 watts typ.	+12 volts \pm 5% @ 0.7A typ. 1.6A starting +5 volts \pm 5% @ 0.8A typ. 12 watts typ.	+12 volts \pm 5% @ 0.7A typ. 1.6A starting +5 volts \pm 5% @ 0.8A typ. 12 watts typ.
50° to 122°F (10° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 25,000 ft. 5 to 13.77 Hz, .036 in. p-p 13.77 to 500 Hz, .35 G pk 10 G, 11 ms	50° to 122°F (10° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 25,000 ft. 5 to 13.77 Hz, .036 in. p-p 13.77 to 500 Hz, .35 G pk 10 G, 11 ms	50° to 122°F (10° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 25,000 ft. 5 to 13.77 Hz, .036 in. p-p 13.77 to 500 Hz, .35 G pk 10 G, 11 ms	50° to 122°F (10° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 25,000 ft. 5 to 13.77 Hz, .036 in. p-p 13.77 to 500 Hz, .35 G pk 10 G, 11 ms	50° to 122°F (10° to 50°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 25,000 ft. 5 to 13.77 Hz, .036 in. p-p 13.77 to 500 Hz, .35 G pk 10 G, 11 ms
-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 14.77 Hz, .047 in. p-p 14.77 to 500 Hz, .5 G pk 40 G, 11 ms	-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 14.77 Hz, .047 in. p-p 14.77 to 500 Hz, .5 G pk 40 G, 11 ms	-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 14.77 Hz, .047 in. p-p 14.77 to 500 Hz, .5 G pk 40 G, 11 ms	-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 14.77 Hz, .047 in. p-p 14.77 to 500 Hz, .5 G pk 40 G, 11 ms	-40° to 140°F (-40° to 60°C) 8% to 80% non-condensing 78°F non-condensing (25.5°C) -1,000 to 40,000 ft. 5 to 14.77 Hz, .047 in. p-p 14.77 to 500 Hz, .5 G pk 40 G, 11 ms
1.625 in. 5.750 in. 8.000 in. 4.4 lb.	1.625 in. 5.750 in. 8.000 in. 4.4 lb.	1.625 in. 5.750 in. 8.000 in. 4.4 lb.	1.625 in. 5.750 in. 8.000 in. 4.4 lb.	1.625 in. 5.750 in. 8.000 in. 4.4 lb.
Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.	Underwriters Laboratories Canadian Safety Association T.U.V.

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(714) 380-3910, FAX: (714) 472-8885
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