

**hp StorageWorks
magneto-optical
storage family**

**reliable, high-volume,
archival storage**



hp StorageWorks
magneto-optical jukeboxes
keep vast amounts of data
at your fingertips, allowing you
to store and share information
quickly, safely and affordably,
year after year.



i n v e n t

HP's vertical cable lift system combines a three-point attachment and low-weight servo to increase the acceleration rate of the transport mechanism. The patented lift system ensures fast, reliable disk exchanges in all HP jukeboxes.



With two or four multifunction drives, single-box storage capacities up to 691 gb, and 6.5-second cartridge exchange times, HP mid-range storage systems define the term "affordable power."

hp storageworks magneto-optical jukeboxes are a safe, permanent way to archive huge amounts of information and keep it immediately accessible. A high-speed alternative to paper-, tape- or microfiche-based storage, these industry-standard systems accelerate the way you store, retrieve and use your mission-critical data. With an HP jukebox, your storage system becomes a competitive asset that allows you to improve customer service, reduce back-office costs, provide information for audits, and enhance the way you analyse, share and distribute information.

built to scale

HP optical jukeboxes scale as needed. Choose your storage capacity (from 9.1 gb in the standalone drive to 2.2 tb in the HP model 2200mx); number of drives per jukebox (from 1 to 10); and number of cartridge slots (from 24 to 238). Order what you need today, and expand your system at any time. Upgrade kits allow you to add drives and cartridge slots—within the same cabinet on some models—so storage capacity can keep pace with your ever-increasing storage and performance requirements. Since all HP jukeboxes are fully compatible, you also have the option of migrating to a larger, next-generation system while leveraging your investment in disks, data, software and training.

built to perform

HP optical jukeboxes are ready to work for you. With optical cartridge capacities up to 9.1 gb, true fast-synchronous burst data transfer rates up to 10 mb/second, and sustained transfer rates of up to 6.1 mb/second, these jukeboxes increase capacity by 75 percent over earlier HP optical systems, significantly lowering the cost per gigabyte of storage.

built to last

With HP-tested robotics, drive mechanisms and media, HP optical jukeboxes are rated for up to two million MSBF* with no preventive maintenance required. Some models have hot-swappable drives. If a drive ever fails, it can be replaced on the fly, without bringing the jukebox down.^{††} And all components, including jukebox, drives and media, are backed by HP's hallmark service and support, available around the world to keep you up and running.

built for fibre

All large and medium (9.1 and 5.2 gb-based) HP jukeboxes support fibre channel connectivity through the use of HP fibre channel-to-SCSI bridge products. The increased cabling distance (up to 500 meters) provided by fibre channel allows you to physically separate your jukebox from your host server, enabling greater security without introducing the bottleneck of LAN architecture.

built for the future

HP optical jukeboxes protect your investment in key data. The systems will read every generation of industry-standard 5.25-inch magneto-optical media ever sold^{††} (including 650 mb and 1.3 gb disks), and will both read and write 2.6 gb, 5.2 gb and 9.1 gb disks.

built to work

HP optical jukeboxes are multifunctional—they support both rewritable and write-once-read-many (WORM) optical disk formats—so one system can meet your short-term and long-term storage needs. Rewritable disks allow a virtually unlimited number of writes, reads and erases with no degradation of disk or data; WORM disks allow just one write operation, and use permanently embedded codes to prevent erasure or overwriting.

* MTBF: mean time between failure. MSBF: mean swaps between failure.
†† System/software dependent.

can we build one for you?

HP optical jukeboxes are more than just a fast, cost-effective way to keep data accessible. They're also a competitive advantage for any company whose reputation rests with its ability to share and access information. Call your nearest HP sales office today, and see for yourself why HP is the worldwide leader in magneto-optical storage.

The HP StorageWorks 9100mx is the perfect desktop accessory for today's storage-hungry environments where virtually endless amounts of data must be stored simply, reliably, affordably and quickly.



The HP 220mx offers 70 percent more capacity than its predecessor, the HP 125ex. With one or two multifunction 9.1 gb drives, 24 slots and a 12-second cartridge exchange time, it's a cost-effective entry to the HP jukebox family.

technical information

hp StorageWorks magneto-optical jukeboxes

design characteristics

model no.	2200mx	1200mx	700mx	600mx	300mx	220mx	9100mx
capacity(gb)	2165.8	1164.8	691.6	582.4	291.2	218.4	9.1
slots	238	128	76	64	32	24	1
drives	4, 6, or 10	4 or 6	2	4	2	1 or 2	1
avg. disk exchange time*	6.5 s	6.5 s	6.5 s	6.5 s	6.5 s	12 s	–
fibre channel bridge support	yes	yes	yes	yes	yes	no	no

* The time it takes to stop reading data on a disk, exchange disks, and begin reading data on another disk.

drive characteristics

disk capacity	9.1 gb
average seek	25 ms
short seek (across 2.2 mb)	6 ms
average latency	10 ms
rotational speed	3000 rpmr
data transfer rate (software/system dependent)	
reads (max. sustained)	6.1 mb/s
writes (max. sustained)	3.1 mb/s
burst (synchronous)	10 mb/s
burst (asynchronous)	4 mb/s
read/write error rate	<1 per 10 ¹⁴ bytes
disk load/unload time	
load (w/spin-up)	5.5 s (avg)
unload (w/spin-down)	3.0 s (avg)
buffer size	8 mb
read buffering	read aheads
write buffering	immediate reporting, write re-ordering

† Results of 1/3 stroke plus latency over 50 mb bandwidth.

hp 5.25-inch magneto-optical cartridges

HP magneto-optical cartridges are engineered to meet and surpass the most stringent industry standards, resulting in the highest levels of data integrity. Your operating system and software determine the type of cartridges (rewritable/write once) that are supported in your HP system. Product numbers listed below are HP's 4096 to 512 bytes/sector optical cartridges. HP jukeboxes support reads and writes on 9.1, 5.2 and 2.6 gb cartridges, and read-only on 1.3 gb and 650 mb cartridges. All cartridges are ISO/IEC 15286-compliant.

	4096 bytes/sector	2048 bytes/sector	1024 bytes/sector	512 bytes/sector
capacity (4.5/side)	9.1 gb (4.5/side)	8.6 gb (4.3/side)	9.1 gb (4.5/side)	9.1 gb
single rewritable cartridge	C7983A	C7985A	C7987A	C7988A
single write-once cartridge	C7984A	C7986A	N/A	N/A

dimensions

	2200mx, 1200mx	700mx, 600mx, 300mx	220mx	9100mx
height	1806.5 mm (71.1 in)	914 mm (36.0 in)	624.7 mm (24.6 in)	100 mm (3.9 in)
width	875.7 mm (34.5 in)	863 mm (33.9 in)	220.1 mm (8.7 in)	165 mm (6.5 in)
depth (in)	741.8 mm (29.2 in)	482 mm (19.0 in)	749.3 mm (29.5 in)	280 mm (11.0 in)
weight (net)	222.7 kg (490 lbs)	100 kg (220 lbs)	39 kg (86 lbs)	3.7 kg (8.2 lbs)
weight (shipping)	298.0 kg (657 lbs)	127 kg (280 lbs)	44.5 kg (98 lbs)	4.4 kg (9.7 lbs)

product certification

	2200mx, 1200mx, 700mx, 600mx, 300mx, 220mx	9100mx
safety	UL 1950, CSA 950, TUV IEC 950	UL 1950, CSA 950, TUV IEC 950
emissions	FCC Class "A", CISPR 22, Class "A"	FCC Class "B", CISPR 22, Class "B"
laser	CDRH, IEC 825	CDRH, IEC 825

reliability and service

2200mx, 1200mx, 700mx, 600mx, 300mx

MSBF (robotics)	2,000,000 swaps
MSBF (drive)	750,000 swaps
MTBF (robotics)	100,000 hours
MTBF (drive)	100,000 hours
Mean Time to Repair	30 minutes
preventive maintenance	None required

220mx

MSBF (drive)	750,000 swaps
MSBF (robotics)	1,000,000 swaps
MTBF	100,000 hours
Mean Time to Repair	30 minutes
preventive maintenance	None required

environmental specifications

temperature

2200mx, 1200mx

operating	10° to 32°C
*non-operating	-40° to 60°C
gradient	10° C per hour
*transportation (<14 consecutive days)	-30° to 60°C

700mx, 600mx, 300mx

operating	10° to 40°C
*non-operating	-40° to 60°C
gradient	10° C per hour
*transportation (<14 consecutive days)	-30° to 60°C

220mx, 9100mx

operating	10° to 40°C
*non-operating	-40° to 60°C
gradient	10° C per hour

humidity

operating	10% to 80% RH
*non-operating	5% to 90% RH

shock

2200mx, 1200mx, 700mx, 600mx, 300mx	non-operating	10 cm tilt, drop test
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220mx, 9100mx

non-operating	30 g trapezoidal
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vibration (5 to 500 Hz)

2200mx, 1200mx, 700mx, 600mx, 300mx

operating	0.21 g rms
non-operating (random)	2.1 g rms
non-operating (swept-sine)	0.5 g (0 to peak)

220mx

operating	0.21 g rms
non-operating (random)	2.09 g rms
non-operating (swept-sine)	0.5 g (0 to peak)

9100mx

operating	0.3 g rms
non-operating (random)	2.4 g rms
non-operating (swept-sine)	1 g (0 to peak)

acoustic emissions

220mx

operating	<70 dB
idle	~47 dB

9100mx

operating	55 dB
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power requirements

2200mx, 1200mx

line voltage	100 to 240 VAC
line frequency	50 to 60 Hz
power consumption	340 W typical 560 W maximum
energy-saving mode	power savings when robotics are inactive

700mx, 600mx, 300mx

line voltage,	100 to 240 VAC
line frequency	50 to 60 Hz
power consumption	210/240 W typical 250/275 W maximum
energy-saving mode	power savings when robotics are inactive

220mx

line voltage (115 V)	100 to 127 VAC
line voltage (230V)	200 to 240 VAC
line frequency	50 to 60 Hz
power consumption	100 W typical 170 W maximum
energy-saving mode	power savings when robotics are inactive

9100mx

line voltage	100 to 240 VAC
line frequency	50 to 60 Hz
power consumption	30 W typical 50 W maximum

interface

2200mx, 1200mx, 700mx, 600mx, 300mx

SCSI-2	single-ended (HD50) or high-voltage differential (HD68) (user-selectable)
LUN converter	

220mx

SCSI-2	single-ended (HD68) or low-voltage differential (HD68) (auto-sensing)
LVD	

9100mx

SCSI-2	single-ended (HD50)
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*without media

a foundation to build on

HP optical jukeboxes – plus your relationship with Hewlett-Packard, the industry leader in magneto-optical storage – are the foundation of a solid, long-term storage strategy. To learn how these powerful systems can improve the effectiveness of your organisation, call your nearest HP optical storage representative today.

USA	1-800-826-4111
Canada	(905) 206-4383
France	(1) 69 82 60 60
Germany	0180/5 32 62 22
UK	0990 474747



www.hp.com/go/optical

Data subject to change.

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07/02
5981-1774EEE



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