Technical Specifications

HP Storage Solutions for HP Business Notebooks

Models

Optical Drives	HP External USB DVD/RW	F2B56AA
	2013 Upgrade Bay DVD AMO - Carrier and Drive	G1Y56A
Removable Hard Drives	HP 500 GB 7200 rpm SED Hard Drive (US Only)	E8D48AA
	HP 500 GB 7200 rpm Primary SATA Hard Drive	F3B97AA
	HP 750 GB 7200 rpm Primary SATA Hard Drive	H2P67AA
	HP 1 TB 7200 rpm Primary SATA Hard Drive	L3M56AA
	HP Upgrade Bay 750 GB Hard Drive	H2P66AA
	2013 Upgrade Bay 750GB HDD AMO 0 Carrier and Drive	G1Y57AA
Solid State Drives	HP 128 GB Solid State Drive	F4P50AA
	HP 180 GB Solid State Drive	H4T75AA
	HP 256 GB SED Opal 2 Solid State Drive	K1Z11AA
	HP 512 GB Solid State Drive	J2V75AA
	HP 180 GB M.2 Solid State Drive	J2V73AA
	HP 240 GB Solid State Drive 2.5”	T3Y75AA
	HP 256 GB M.2 Solid State Drive	J2V74AA
	HP 256 GB Solid State Drive M.2 2260 (PCIe)	L3M57AA
	HP 256 GB Solid State Drive TLC 2.5"	M0F34AA
	HP 256 GB M.2 PCIe NVMe Solid State Drive	V3K66AA
	HP 512 GB M.2 PCIe NVMe Solid State Drive	V3K67AA
	HP 1 TB Solid State Drive 2280 M.2 PCI-E 3x4 NVME ***New!***	X2E90AA
Brackets	HP Mobile Workstation HDD/SSD Bracket	J2D73AA

HP Storage Solutions

HP storage solutions for your HP business notebook provide additional flexibility and expandability with a range of options that include optical drives, hard drives, and solid state drives.

Optical Drives

HP External USB DVD/RW

With the HP External USB Optical Drive, any available USB port on your notebook or Ultrabook™ becomes a ticket to optical storage. Simply connect the drive with the included USB cable, and get immediate read/write access to your optical media.

Key Benefits

- Write to or access large files, media or music from CDs or DVDs
- Connect easily through a USB 2.0 port
- Lightweight, compact design stores easily into a carrying case or backpack

2013 Upgrade Bay DVD AMO - Carrier and Drive

Create CDs and DVDs, back up or archive permanent data files on CD or DVD media with the HP 2013 Upgrade Bay DVD AMO - Carrier and Drive.

Key Benefits

- Write to or access large files, media or music from CDs or DVDs
- Up to 4.7 GB of data storage capacity (up to 8.5 GB double layer).
- Lightweight, compact design stores easily into a carrying case or backpack.

Removable Hard Drives

HP 500 GB 7200rpm SED Hard Drive , and HP 500 GB/750 GB/ 1 TB 7200rpm Primary SATA Hard Drive

The HP Hard Drives are convenient and affordable solutions for users who require additional storage or a faster dedicated second hard drive.

Key Benefits

- Extend the life of your HP Business Notebook by providing additional storage
- Easy low-cost back-up solution without burdening network resources
- Switch drives between most HP business notebooks
- SMART predictive failure analysis (PFA)

HP Upgrade Bay 750 GB Hard Drive and HP 2011 BNB Notebook Upgrade Bay

Technical Specifications

The HP Upgrade Bay 750 GB Hard Drive and 2011 is convenient and affordable solutions for users who require additional storage or a faster dedicated second hard drive. Model H2P66AA fits into select 20111 and 2012 HP Business Notebooks and works with HP Advanced Docking Stations. Model LX733AA fits into select 2010 and 2011 HP Business Notebook platforms and does not work with HP Docking Stations. Model AU097AA works with HP Advanced Docking Stations and pre-2011 HP Business Notebooks.

Key Benefits

- Extend the life of your HP Business Notebook by providing additional storage
- Easy back-up solution without burdening network resources
- Switch drives between most HP business notebooks
- Warm swappable
- High speed SATA data transfer
- Power/drive activity LED indicator

2013 Upgrade Bay 750 GB HDD AMO 0 Carrier and Drive

The 2013 HP Upgrade Bay 750 GB HDD AMO Carrier and Drive is a convenient and affordable solution for users who require additional storage or a faster dedicated second hard drive.

Key Benefits

- Easy back-up solution without burdening network resources.
- Warm swappable.
- High speed SATA data transfer.
- Power/drive activity LED indicator.

Solid State Drives

HP 128 GB, 180 GB, 240 GB and 256, 512 GB, or 1 TB Solid State Drives

The HP 128 GB, 180 GB, 240 GB, 512 GB, and 1 TB Solid State Drives provide many performance and durability improvements over traditional Hard Disk Drive (HDD) technology. With no moving parts, solid state drives do not need to spin up or mechanically seek files like conventional hard disk drives do. These drive characteristics significantly improve boot-up, shut down, and application loading times as well as overall application responsiveness.

The HP 256 GB SED Solid State Drive includes Trusted Computing Group (TCG) Opal-compliant self-encryption for enhanced data security that adds a layer of authentication to your drive.

Key Benefits

- Store your data with a hard drive with no moving parts
- Get faster transfer speeds and higher cell endurance with Multi Level Cell (MLC) NAND flash memory
- Significantly improve boot up, shut down, and application loading times
- Improved protocol for enhanced data integrity
- Performance increase to up to 6 Gb/s maximum external (burst) data transfer rate
- Native Command Queuing allows the drive to have several write or read commands outstanding at the same time

Bracket

Technical Specifications

HP Mobile Workstation HDD/SSD Bracket

Easily replace or upgrade your hard drive or solid state drive with the HP Mobile Workstation HDD/SSD Bracket.

Simply insert the drive (sold separately) into the bracket, and the bracket into the available drive slot on your HP Mobile Workstation or HP ZBook.

Rest easy with a one-year parts replacement limited warranty.

Optical Drives

HP External USB DVD/RW	**Drive**	Manual tray-load	
	Interface	USB 2.0	
	Dimensions (HxWxD)	0.55 x 5.41 x 5.94 in (1.40 x 14.40 x 13.75 cm)	
	Form Factor	External	
	Access Times	**CD**	1/3 Stroke: 140 ms
		DVD	1/3 Stroke: 160 ms
	Supported Media (read)	DVD-ROM, DVD-R DVD-R , DVD-R DL, DVD-RW, DVD-RAM, DVD+R, DVD+R DL, and +RW CD-ROM, CD-ROM XA, CD-DA Super Audio CD CD-R discs CD-RW discs CPRM (DVD-R/RW/RAM) supported	
	Supported Media (write)	DVD-R DVD-R DL DVD-RW DVD-RAM DVD+R DVD+R DL DVD+RW CD-R/RW	
	Maximum speed		**Normal**
	Write	**DVD-RW**	6X maximum by ZCLV
		DVD+RW	8X maximum by ZCLV
		CD-RW	24 X maximum by ZCLV
	Read	**DVD-R/RW/ROM**	8 X maximum
		DVD-R DL	8 X maximum
		DVD-RAM	6 X maximum
		DVD-Video	4 X maximum
		M-DISC(DVD+R SL)	8 X maximum
		DVD+R/+RW	8 X maximum
		DVD+R DL	8 X maximum
		CD-R/RW/ROM	24 X maximum
		CD-DA	24 X maximum
		Temperature (operating)	

Technical Specifications

	Read and Write	5 to 40 ºC
	Relative Humidity (operating)	10% to 80%
Environmental (all conditions, non-condensing)	**Read**	15% to 85% (Non-Condensing)
	Write	15% to 80% (Depend on the Temperature)
	Temperature (non-operating)	-30 to 40 ºC
	Relative Humidity (non-operating)	10% to 90% (Non-Condensing)
Operating systems supported	Windows 8,Windows 7,Windows Vista,Windows XP,Windows2008,Windows2003,Mac OS X	
System requirements	Pentium IV 2.4 GHz or higher, compatible (Recommended: Pentium IV 3.2 GHz or Higher) RAM: 256 MB or higher (Recommended: 128 MB) HDD: 20 GB or more of available space Video Memory: 64 MB or higher (Recommend: 128 MB) Interface: USB 2.0	
Option kit contents	HP Mobile USB DVD/RW Drive, software, documentation	
Compatibility	All HP Business Notebook PCs, HP Mobile Workstations	

Note: Actual speeds may vary. Intended only for creation and storage of original material and other lawful uses. Double-layer discs may not be compatible with many existing single-layer DVD drives and players.

2013 Upgrade Bay DVD AMO - Carrier and Drive	**Drive**	Manual tray-load
	Orientation	Horizontal or vertical
	Operating Temperature	5 to 50 °C
	Interface	SATA 1.0
	Transfer Mode	1X CD-ROM = 150 Kbytes/second 1X DVD-ROM = 1350 Kbytes/second (1KB = 1024 Bytes) DVD+R Write 10800 KB/s up to 8X DVD+R DL Write 5400 KB/s up to 6X DVD+RW Write 10800 KB/s up to 8X DVD-R Write 10800 KB/s up to 8X. DVD-R DL Write 5400 KB/s up to 6X DVD-RW Write 8100 KB/s up to 6X DVD-RAM Write 6750 KB/s up to 5X CD-R Write 3600 KB/s up to 24X. CD-RW Write 2400 KB/s up to 16X CD-ROM Read 3600 KB/s up to 24X. DVD-ROM Read 10800 KB/s up to 8X.
	Weight	4.94 lb (140 g)
	Dimensions (HxWxD)	5.51 x 5.09 x ,62 in 13.99 x 12.93 x 1.58 cm
	Form Factor	Commands for DVD Devices. Small Form Factor Connector Standards
	Capacity	Read
		Write
	Access Times	CD

Technical Specifications

	DVD
Max Data transfer rates (sustained)	24X CD-ROM 8X DVD 24X CD-R 16X CD-RW 8X DVD+R 4X DVD+RW 8X DVD-R 4X DVD-RW 2.4X DVD+R(9) 5X DVD-RAM
Supported Media (read)	DVD-R DVR-W DVD+RW DVD+R DVD+R DL DVD-R DL DVD-RAM
Supported Media (write)	CD-R CD-RW DVD-R DVD-R DL DVD-RW DVD+R DVD+R DL DVD+RW DVD-RAM
Max Media Capacity (read)	9.40 GB
Max Media Capacity (write)	8.50 GB
Power	5 VDC < 800 mA Read (typical at O.D.) < 1,000 mA Write (typical at O.D.) <1600 mA (maximum-excluding spike current <1ms duration) <65 mA (stand-by - partial if supported) <40 mA (stand-by - slumber)
Environmental (all conditions, non-condensing)	**Temperature** (operating) **Relative Humidity** (operating) **Maximum Wet Bulb Temperature** (operating)
Operating systems supported	Windows 7 and Windows 8
Option kit contents	2013 Upgrade Bay DVD AMO - Carrier and Drive and documentation
Compatibility	HP ZBook 15/17 Mobile Workstations

Note: Actual speeds may vary. Intended only for creation and storage of original material and other lawful uses. Double-layer discs may not be compatible with many existing single-layer DVD drives and players.

Technical Specifications

Removable Hard Drives

HP 500 GB 7200rpm SED Hard Drive	**Drive Weight**	0.21 lb (95 g)	
	Capacity	500 GB	
	Height	0.28 in (7 mm)	
	Width	xx in (xx mm)	
	Interface	ATA-2, SATA 2.5, xx Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	Up to 300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	1.1ms
		Average	13ms
		Maximum	25ms
	Rotational Speed	7200 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
	Compatibility	HP EliteBook 8570w and 8770w Mobile Workstations HP ProBook 6470b, 6475b and 6570b Notebook PCs HP EliteBook 2170p and 2570p Notebook PCs Folio 9470m Notebook PC	
	Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 465 GB is user available.		
HP 500 GB 7200rpm Primary SATA Hard Drive	**Drive Weight**	0.25 lb (115g)	
	Capacity	500 GB	
	Height	0.27 in (7 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	150 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	1.5ms
		Average	11ms
		Maximum	22ms
	Rotational Speed	7200 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
	Compatibility	HP ProBook 430, 440, 450, 470, 445 , 450, 470, 640, 650, 645, 655 , 4440s, 4540s, 4740s, 4445s/4446s, 4545s, 6470b, 8470p, 6570b, 8570p Notebook PCs	
	Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 465 GB is user available.		
HP 750 GB 7200rpm Primary SATA Hard Drive	**Drive Weight**	0.25 lb (115g)	
	Capacity	750 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	300 MB/s (Drive Capability)

Technical Specifications

	Seek Time (typical reads, including settling)	**Single Track**	1.5ms
		Average	11ms
		Maximum	22ms
	Rotational Speed	7200 rpm	
	Logical Blocks	1,465,149,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
	Compatibility	HP ProBook 4XXX s-series , , 6360b, 6460b, 6465b, 6470b, 6475b, 6560b, 6565b, and 6570b Notebook PCs HP ProBook 440, 445, 470, 640, 645, 650, 655 HP EliteBook 2170p, 2560p, 2570p, 8460p, 8470p, 8560p, and 8570p, 820, 840 Notebook PCs HP EliteBook 8460w, 8470w, 8560w, 8570w, 8760w, and 8770w HP EliteBook 820, 840, 850 HP ZBook 14, 15, 17 Mobile Workstations	

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 698 GB is user available.

HP 1 TB 7200rpm Primary SATA Hard Drive	**Drive Weight**	115g	
	Capacity	1000GB	
	Height	9.5mm	
	Width	70mm	
	Interface	ATA-8, SATA 3.0	
	Transfer Rate	**Synchronous (maximum)**	600MB/s
	Seek Time (typical reads, including settling)	**Single Track**	2ms
		Average	13ms
		Maximum	15ms
	Rotational Speed	7200 rpm	
	Logical Blocks	1,465,149,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
	Compatibility	HP EliteBook 700, 800 Notebook PCs, HP ZBook 14/15/17 Mobile Workstations	

Note: 1 TB = a trillion bytes. Actual formatted capacity is less. Up to 931 GB is user available.

HP Upgrade Bay 750 GB Hard Drive	**Drive Weight**	0.44 lb (0.198 kg) with one bezel
	Capacity	750 GB
	Height	0.50 in (1.27 cm)
	Width	5.04 in (12.8 cm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	300 Mb/s
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security
	Compatibility	HP ProBook 6360b, 6460b, 6465b, 6470b, 6475b, 6560b, 6565b, and 6570b Notebook PCs HP EliteBook 2170p, 8460p, 8470p, 8560p, and 8570p Notebook PCs

Technical Specifications

		HP EliteBook 8460w, 8470w, 8560w, 8570w, 8760w, and 8770w Mobile Workstations
		Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 698 GB is user available.
HP 2013 Upgrade Bay 750 GB Hard Drive	**Weight** (without HDD)	1.59 lb (45 g)
	Dimensions (HxWxD)	5.30 x 5.04 x .60 in 13.45 x12.80 x 1.53 cm
	Formatted Capacity	750 GB
	Total logical sectors	1465149168
	Interface	SATA 3.0
	Data Transfer rate @ Disk to Buffer SATA	170 Mbytes/s up to 600MB/s
	RPM	7200
	Operating systems supported	Windows 7 and Windows 8
	Operating Temperature	0 to 60°C
	Option kit contents	HP 2013 Upgrade Bay 750 GB Hard Drive and documentation
	Compatibility	HP ZBook 15, 17 Mobile Workstations
	Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 698 GB is user available.	

Solid State Drives

HP 128 GB Solid State Drive	**Capacity***	128 GB	
	NAND Flash Memory	Multi Level Cell (MLC) with wear leveling controller	
	Interface type	SATA 6.0Gb/sec	
	Dimensions-external (W x H x D)	2.75 x 0.26 x 4 in (69.85 x 6.80 x 100.2 mm)	
	Weight	0.12 lb (55 g)	
	Internal transfer rate	**Write speed**	Up to 340 MB/s
		Read speed	Up to 120 MB/s
	Host transfer rate	**Ultra DMA mode**	Up to 150 MB/s
	Power	**DC power requirement**	5 VDC 5%-100 mV ripple p-p
		Total power consumption	<1.12Watt
	Environmental (all conditions, non-condensing)	**Temperature** (operating)	32° to 158° F (0° to 70° C)
		Relative Humidity (operating)	5% to 95%
		Maximum Wet Bulb Temperature (operating)	84° F (29° C)
	Operating systems supported	Windows XP Professional, Windows XP Professional x64 or Windows XP Home, Windows 7/8/8.1No driver is required for this device. Native support is provided by the operating system.	
	Regulations	UL, CSA, EN 60950-2000, CISPR Pub 22 Class B, CNS 13438, AS/NZS CISPR 22:2002 Class B, R1113 and C1172 Class B	
	Option kit contents	HP 128 GB Solid State Drive, documentation	

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	Compatibility	HP ProBook 430, 440, 450, 470, 4440, 4441, 4446, 4540, 4740, 640, 645, 650, 655, 6470b, 6570b Notebook PCs HP EliteBook, 725, 745, 755, 820, 840, 850 Notebook PCs HP ZBook 14, 15, 17 Mobile Workstations

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 119 GB is user available.

HP 180 GB Solid State Drive	**Capacity***	180 GB	
	NAND Flash Memory	Multi Level Cell (MLC)	
	Interface type	SATA 6Gb/sec (SATA Gen3 compliant)	
	Dimensions-external (W x H x D)	2.74 x 0.276 x 3 in (6.98 x 0.70 x 10.2 cm)	
	Weight	0.17 lb (78 g)	
	Internal transfer rate	**Write speed**	Up to 550 MB/s
		Read speed	Up to 520 MB/s
	Power	**DC power requirement**	950 mW (typical non-DIPM)
		Total power consumption	<3.2 Watts (typical)
	Environmental (all conditions, non-condensing)	**Temperature** (operating)	32° to 158° F (0° to 70° C)
		Relative Humidity (operating)	5% to 95%
		Maximum Wet Bulb Temperature (operating)	84° F (29° C)
	Regulations	UL, CE, C-tick, BSMI, KCC, Microsoft WHQL, VCCI, SATA-IO	
	Option kit contents	HP 180 GB Solid State Drive, documentation	
	Compatibility	HP ProBook 640, 645, 650, 655 Notebook PCs HP ProBook 6470b and 6570b Notebook PCs HP EliteBook 725, 745, 755, 820, 840, 850 Notebook PCs HP Elitebook 2170p, 2570p, 8470p, and 8570p Notebook PCs HP EliteBook Folio 9470m Notebook PC HP EliteBook 8470w, 8570w, and 8770w Mobile Workstations HP ZBook 14, 15, 17 Mobile Workstations	

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 167 GB is user available.

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240 GB Solid State Drive	**Capacity***	240 GB
	NAND Flash Memory	Multi Level Cell (MLC) with wear leveling controller
	Interface type	SATA 3 (6Gbps)
	Dimensions-external (W x H x D)	2.75 x 3.95 x .28 in 6.99 x 10.05 x .70 cm
	Weight	Up to .17 lb (78 g)
	Internal transfer rate	**Data Transfer Rate** (4k sector Random / 128k Sequential) **Sequential Read** Up to 540 MB/s **Random Read** Up to 41K IOPs **Sequential Write** Up to 490 MB/s **Random Write** Up to 80K IOPs; Typical 49K IOPs

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Host transfer rate	TBD
Power	Active (BAPCo MobileMark* 2007 Workload): 165 mW Idle: 55 mW DevSleep: 5 mW
Environmental (all conditions, non-condensing)	**Temperature: Operating:** 0 C to 70 C; Non-Operating: -55 C to 95 C **Humidity: Operating:** 5 to 95 %; Non-Operating: 5 to 95 % **Shock (operating and non-operating):** 1,500 G/0.5 ms
Operating systems supported	TBD
Regulations	TBD
Option kit contents	TBD
Compatibility	HP Elitebook 820 G2, G1, 745 G2, 755 G2, 750 G2, 750 G1, 850 G2, 850 G1; ZBook 14 G2, 15 G2, 17 G2, 17

HP 256 GB SED Opal 2 Solid State Drive

Capacity*	256 GB	
NAND Flash Memory	Multi Level Cell (MLC) with wear leveling controller	
Interface type	SATA 6 Gb/sec (SATA Gen3 compliant)	
Dimensions-external (W x H x D)	2.74 x 0.276 x 3 in (6.98 x 0.70 x 10.2 cm)	
Weight	0.16 lb (73 g)	
Internal transfer rate	**Write speed**	Up to 450 MB/s
	Read speed	Up to 260 MB/s
Host transfer rate	**Ultra DMA mode**	Up to 100 MB/s (Support Ultra DMA 5)
Power	**DC power requirement**	5 VDC 5%-100 mV ripple p-p
	Total power consumption	< 4.50 Watt (max value)
Environmental (all conditions, non-condensing)	**Temperature** (operating)	32° to 158° F (0° to 70° C)
	Relative Humidity (operating)	5% to 95%
	Maximum Wet Bulb Temperature (operating)	84° F (29° C)
Operating systems supported	Windows® 7 Home Basic 32-bit, Windows 7 Home Premium 32- and 64-bit, Windows 7 Professional 32- and 64-bit, Windows XP Professional 32-bit, Windows XP Professional x64 or Windows XP Home. No driver is required for this device, although the HP-tested driver is recommended. Native support is provided by the operating system.	
Regulations	UL, CSA, EN 60950-2005, CISPR Pub 22 Class B, CNS 13438, AS/NZS CISPR 22:2002 Class B, R1113 and C1172 Class B	
Option kit contents	HP 256 GB SED Solid State Drive, documentation	
Compatibility	HP ProBook 430, 640, 645,650, 655 HP ProBook 6460b, 6470b, 6560b, and 6570b Notebook PCs HP EliteBook 2170p, 2560p, 2570p, 2760p, 8460p, 8470p, 8560p, and 8570p Notebook PCs HP EliteBook 725, 745, 755, 820, 840, 850 Notebook PCs HP EliteBook Revolve 810 HP EliteBook 8460w, 8470w, 8560w, 8570w, 8760w, and 8770w Mobile Workstations	

HP ZBook 14, 15, 17 Mobile Workstations

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 238 GB is user available.

512 GB Solid State Drive	**Capacity***	512 GB	
	NAND Flash Memory	Multi Level Cell (MLC) with wear leveling controller	
	Interface type	SATA 6 Gb/sec (SATA Gen3 compliant)	
	Dimensions-external (W x H x D)	2.74 x 0.276 x 3.56 in (6.98 x 0.70 x 9.06 cm)	
	Weight	0.16 lb (73 g)	
	Internal transfer rate	**Write speed**	Up to 500 MB/s
		Read speed	Up to 550 MB/s
	Host transfer rate	**Ultra DMA mode**	Up to 100 MB/s (Support Ultra DMA 5
	Power	**DC power requirement**	5 VDC 5%-100 mV ripple pk-pk
		Total power consumption	< 8.2 Watt (max value)
	Environmental (all conditions, non-condensing)	**Temperature** (operating)	32° to 158° F (0° to 70° C)
		Relative Humidity (operating)	5% to 95%
		Maximum Wet Bulb Temperature (operating)	104° F (40° C)
	Operating systems supported	Windows® 7 Home Basic 32-bit, Windows 7 Home Premium 32- and 64-bit, Windows 7 Professional 32- and 64-bit, Windows XP Professional 32-bit, Windows XP Professional x64 or Windows XP Home. No driver is required for this device, although the HP-tested driver is recommended. Native support is provided by the operating system.	
	Regulations	UL, CSA, EN 60950-1, CISPR Pub 22 Class B, CNS 13438, AS/NZS CISPR 22:2006 Class B	
	Option kit contents	HP 512GB Solid State Drive (SSD), documentation	
	Compatibility	HP EliteBook 820, 840 Notebook PCs HP ZBook 14, 15, 17 Mobile Workstations	

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 476 GB is user available.

HP 180 GB M.2 Solid State Drive	**Capacity***	180 GB	
	NAND Flash Memory	Multi Level Cell (MLC) with wear leveling controller	
	Interface type	SATA 6 Gb/sec (SATA Gen3 compliant)	
	Dimensions-external (W x H x D)	2.74 x 0.276 x 3 in (2.2 x 8 x 0.15 cm)	
	Weight	<0.02 lb (10 g)	
	Internal transfer rate	**Write speed**	Up to 540 MB/s
		Read speed	Up to 490 MB/s
	Host transfer rate	**Ultra DMA mode**	Up to 100 MB/s (Support Ultra DMA 5)
	Power	**DC power requirement**	3.3 VDC 3.3%-100 mV ripple pk-pk

Technical Specifications

	Total power consumption	< 4.95 Watt (max value)
Environmental (all conditions, non-condensing)	**Temperature** (operating)	32° to 158° F (0° to 70° C)
	Relative Humidity (operating)	5% to 95%
	Maximum Wet Bulb Temperature (operating)	104° F (40° C)
Operating systems supported	Windows® 7 Home Basic 32-bit, Windows 7 Home Premium 32- and 64-bit, Windows 7 Professional 32- and 64-bit, Windows XP Professional 32-bit, Windows XP Professional x64 or Windows XP Home. No driver is required for this device, although the HP-tested driver is recommended. Native support is provided by the operating system.	
Regulations	UL, CSA, EN60950-1:2006, CISPR Pub 22 Class B, CNS 13438, AS/NZS CISPR 22:2002 Class B~~	
Option kit contents	180GB SSD M.2, documentation	
Compatibility	TBD	

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 167 GB is user available.

256 GB M.2 Solid State Drive	**Capacity***	256 GB	
	NAND Flash Memory	Multi Level Cell (MLC) with wear leveling controller	
	Interface type	SATA 6 Gb/sec (SATA Gen3 compliant)	
	Dimensions-external (W x H x D)	2.74 x 0.276 x 3 in (2.2 x 8 x 0.15 cm)	
	Weight	<0.02 lb (10 g)	
	Internal transfer rate	**Write speed**	Up to 465 MB/s
		Read speed	Up to 515 MB/s
	Host transfer rate	**Ultra DMA mode**	Up to 100 MB/s (Support Ultra DMA 5)
	Power	**DC power requirement**	3.3 VDC 3.3%-100 mV ripple pk-pk
		Total power consumption	< 6.6 Watt (max value)
	Environmental (all conditions, non-condensing)	**Temperature** (operating)	32° to 158° F (0° to 70° C)
		Relative Humidity (operating)	5% to 95%
		Maximum Wet Bulb Temperature (operating)	104° F (40° C)
	Operating systems supported	Windows® 7 Home Basic 32-bit, Windows 7 Home Premium 32- and 64-bit, Windows 7 Professional 32- and 64-bit, Windows XP Professional 32-bit, Windows XP Professional x64 or Windows XP Home. No driver is required for this device, although the HP-tested driver is recommended. Native support is provided by the operating system.	
	Regulations	UL, CSA, EN60950-1:2006, CISPR Pub 22 Class B, CNS 13438, AS/NZS CISPR 22:2002 Class B,	
	Option kit contents	HP 256GB SSD M.2, documentation	
	Compatibility	TBD	

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 238 GB is user available.

HP 256 GB Solid State Drive M.2 2260 PCIe	**Capacity***	256 GB
	NAND Flash Memory	MLC

Technical Specifications

Interface type	ATA-8, PCIe 2.0	
Dimensions-external (W x H)	0.87 x 0.14 in (22 x 3.58 mm)	
Weight	0.02 lb (10 g)	
Internal transfer rate	**Write speed**	Up to 620 MB/s
	Read speed	Up to730 MB/s
Host transfer rate	**Ultra DMA mode**	
Power	**DC power requirement**	
	Total power consumption	
Environmental (all conditions, non-condensing)	**Temperature** (operating)	
	Relative Humidity (operating)	
Operating systems supported	TBD	
Regulations	TBD	
Option kit contents	HP 256 GB Solid State Drive M.2 2260, documentation	
Compatibility	TBD	

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 238GB is user available.

HP 256 GB Solid State Drive TLC 2.5"	**Capacity***	256 GB
	NAND Flash Memory	
	Interface type	SATA 3 (6Gbps)
	Dimensions-external (W x H)	2.5 x .27 in (63.5 mm x 7mm
	Weight	0.10 lb (45 g)
	Interface	SATA 3 (6Gbps)
	READY TIME, MAXIMUM (to Not Busy)	1.0 s
	Acess times, Logical	TYP.
	Data Transfer rate (4k sector Random / 128k Sequential)	0.1 ms
	Sequential Read	Up to 510 MB/s
	Random Read	Up to 90K IOPS
	Sequential Write	Up to 280 MB/s
	Random Write	Up to 70K IOPS
	Logical Blocks	500118192
	Operating Temperature	0 to 70 °C
	Option kit contents	HP 256 GB Solid State Drive, documentation
	Compatibility	HP 245, 250, 250, 255 G4

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 238 GB is user available.

HP 256 GB M.2 PCIe NVMe Solid State Drive	**Capacity***	256 GB	
	Interface type	M.2 PCIe Gen 3x4 NVMe	
	Form Factor	M.2 2280 Single Sided	
	Dimensions-external (W x H x D)	80.15 x 22.15 x 2.38 (mm)	
	Weight	<0.02 lb (10 g)	
	Internal transfer rate	**Sequential Write speed**	Up to 1260 MB/s
		Sequential Read speed	Up to 2150 MB/s
	Host transfer rate	**Ultra DMA mode**	Up to 100 MB/s (Support Ultra DMA 5)
	Power	**DC power requirement**	3.3 VDC 3.3%-100 mV ripple pk-pk
		Total power consumption	< 6.6 Watt (max value)
	Environmental (all conditions, non-condensing)	**Temperature** (operating)	32° to 158° F (0° to 70° C)
		Relative Humidity (operating)	5% to 95%
		Maximum Wet Bulb Temperature (operating)	104° F (40° C)
	Operating systems supported	Windows® 7 Home Basic 32-bit, Windows 7 Home Premium 32- and 64-bit, Windows 7 Professional 32- and 64-bit, Windows XP Professional 32-bit, Windows XP Professional x64 or Windows XP Home. No driver is required for this device, although the HP-tested driver is recommended. Native support is provided by the operating system.	
	Regulations	UL, CSA, EN60950-1:2006, CISPR Pub 22 Class B, CNS 13438, AS/NZS CISPR 22:2002 Class B~~	
	Option kit contents	256 GB SSD M.2, documentation	
	Compatibility	ZBook 15, 17 G3	

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 167 GB is user available.

HP 512 GB M.2 PCIe NVMe Solid State Drive	**Capacity***	512 GB	
	Interface type	M.2 PCIe Gen 3x4 NVMe	
	Form Factor	M.2 2280 Double Sided	
	Dimensions-external (W x H x D)	80.15 x 22.15 x 2.38 (mm)	
	Weight	<0.02 lb (10 g)	
	Internal transfer rate	**Sequential Write speed**	Up to 1500 MB/s
		Sequential Read speed	Up to 2150 MB/s
	Host transfer rate	**Ultra DMA mode**	Up to 100 MB/s (Support Ultra DMA 5)
	Power	**DC power requirement**	3.3 VDC 3.3%-100 mV ripple pk-pk

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	Total power consumption	< 6.6 Watt (max value)
Environmental (all conditions, non-condensing)	**Temperature** (operating)	32° to 158° F (0° to 70° C)
	Relative Humidity (operating)	5% to 95%
	Maximum Wet Bulb Temperature (operating)	104° F (40° C)
Operating systems supported	Windows® 7 Home Basic 32-bit, Windows 7 Home Premium 32- and 64-bit, Windows 7 Professional 32- and 64-bit, Windows XP Professional 32-bit, Windows XP Professional x64 or Windows XP Home. No driver is required for this device, although the HP-tested driver is recommended. Native support is provided by the operating system.	
Regulations	UL, CSA, EN60950-1:2006, CISPR Pub 22 Class B, CNS 13438, AS/NZS CISPR 22:2002 Class B~~	
Option kit contents	512 GB SSD M.2, documentation	
Compatibility	ZBook 15, 17 G3	

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 167 GB is user available.

HP 1 TB Solid State Drive 2280 M.2 PCI-E 3x4 NVME	**Capacity***	1 TB	
	Interface type	PCIe NVMe Gen3X4	
	Form Factor	M.2 2280	
	Dimensions-external (W x H x D)	0.87 x 0.14 in (22 x 3.65 mm)	
	Weight	0.02 lb (10 g)	
	Internal transfer rate	**Sequential Write speed**	2,400 MB/s
		Sequential Read speed	1,500 MB/s
	Host transfer rate	**Ultra DMA mode**	
	Power	**DC power requirement**	
		Total power consumption	
		Nominal voltage	+3.3 V
	Environmental (all conditions, non-condensing)	**Temperature** (operating)	0 to 70 C
		Relative Humidity (operating)	5 to 95 %
		Maximum Wet Bulb Temperature (operating)	35 C
	Operating systems supported	Win 7 Pro 64, Win 10 Home 64 chinese Market CPPP Win 10 Home 64 High-end Win 10 Home 64 High-end chinese Market Win 10 Home 64 High-end Single Language Win 10 Pro 64 Win 10 Pro 64 Downgrade Win 7 64 FreeDOS 2.0	
	Regulations	RoHS UL CSA EN 60950-1 FCC AS/ NZ CISPR	

	BSMI KCC CE CISPR 22 - Class B
Option kit contents	HP 1 TB Solid State Drive 2280 M.2 PCI-E 3x4 NVME, documentation
Compatibility	ZBook 15U G3 ZBook 15 G3 ZBook 15 Studio G3 ZBook 17 G3

Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 167 GB is user available.

Spares Information

Optical Drives	HP External USB DVD/RW	TBD
	HP Upgrade Bay -- SuperMulti (DL) DVD+/-RW SATA Drive	375197-001
Removable Hard Drives	HP 320 GB 7200rpm SED Hard Drive	618243-001
	Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 298 GB is user available.	
	HP 2011 Upgrade Bay 500 GB Hard Drive	657405-001 (drive) 657406-001 (cradle) 657407-001 (bezel kit)
	Note: GB = 1 billion bytes. Actual formatted capacity is less. Up to 465 GB is user available.	

Service and Support

Each HP Storage Solution carries a one-year limited warranty. Additional support is available 24 hours a day, seven days a week by phone as well as online support forums.

Note: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.

Technical Specifications

Summary of Changes

Date of change:	Version 1 to 2		Description of change:
June 5, 2014	v30to v30.1	Added	SSDs and updated the compatibility section
July 1, 2014	v30.1 to v31	Updated	Updated HP 500 GB 7200rpm specs for height
July 30, 2014	v31 to v32	Added	HP 256 GB SED Opal 2 Solid State Drive
January 27, 2015	v32 to v33	Added	HP 1TB 7200rpm Primary SATA Hard Drive and HP 256 GB Solid State Drive M.2 2260 Added new disclaimers
February 6, 2015	v33	Removed	HP 2011 Upgrade Bay 500 GB Hard Drive and HP 256 GB SED Solid State Drive
February 23, 2015	v33 to v34	Added	HP 256 GB Solid State Drive TLC 2.5”
November 17, 2015	v34 to v35	Added	HP 240 GB Solid State Drive
		Updated	Legal disclaimer Storage disclaimer
January 20, 2016	v35 to v36	Added	HP 256 GB M.2 PCIe NVMe Solid State Drive V3K66AA HP 512 GB M.2 PCIe NVMe Solid State Drive V3K67AA
April 1, 2016	v36 to v37	Added	HP 1 TB Solid State Drive 2280 M.2 PCI-E 3x4 NVME

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