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HPE Smart Array Hybrid Capacitors QuickSpecs

The HPE Smart Storage Hybrid Capacitor is a battery-free technology for power storage that provides data protection for cached data while eliminating costs and environmental impact of lithium-ion batteries.

For those running HPE Gen10 servers, the HPE Smart Hybrid Capacitor is a centralized backup power source supporting multiple controllers where the NAND flash memory on HPE Smart Array Performance Class controllers and the HPE Smart Hybrid Capacitor work together to save cached data in the event of unplanned server power loss.

Overview

When the hybrid capacitor module detects power loss it keeps critical parts of the controller active long enough to allow data to be copied from the onboard controller cache to the flash memory.

Please note, although the hybrid capacitor module is mechanically compatible with the 96W Smart Storage Battery (P01366-B21 and P01367-B21), the module cannot be used in combination with the Smart Storage Battery. In most cases, only a single Smart Storage Battery or a single Smart Hybrid Capacitor can be used per system. Please check your server platform QuickSpecs for details.

Models

HPE Smart Storage Hybrid Capacitor with 145mm Cable Kit	P02377-B21
HPE Smart Storage Hybrid Capacitor with 260mm Cable Kit	P02381-B21

Notes: The HPE Smart Storage Hybrid Capacitor is only supported on Gen10 servers or later.
Before installing the HPE Smart Storage Hybrid Capacitor, verify that the system BIOS meets the minimum firmware requirements to support the hybrid capacitor module.



Overview

XXXXXX**-X21** is SKU designation formed by a common six-digit part number and a **-X21** suffix that identifies a SKU that is available across multiple server family lines. Refer to the table below to find the SKU suffix that applies to the specific server product line this option can be ordered with.

-B21	-H21	-K21
COMPUTE Server Line	**SPECIALIZED COMPUTE Server Line**	**STORAGE Line**
HPE Cloudline CL2100/CL2200/CL2800/CL3100/CL4100/CL5200/CL5800 Servers HPE Composable Cloud for ProLiant DL HPE ProLiant BL460c/BL660c Servers HPE ProLiant DL20/DL160/DL180 Servers HPE ProLiant DL325/DL360/DL380/DL385/DL560/DL580 Servers HPE ProLiant DX360/DX380 Servers HPE ProLiant MicroServer HPE ProLiant for Microsoft Azure Stack HPE ProLiant ML30/ML110/ML350 Servers HPE Synergy 480/660 Systems HPE ProLiant DX170r/DX190r, DX2000 Servers HPE ProLiant DX560 Gen10 server HPE ProLiant DX4200 Gen10 server	HPE Apollo 35/40/70 Systems HPE Apollo 2000/6000 Servers HPE XL170r/XL190r/XL270d (Apollo 6500) Gen10 Server for BlueData Software HPE Converged System 300/500/700/750 HPE Edgeline Systems and Servers HPE Integrity BL860c i6/BL870c i6/BL890c i6 Server Blades HPE Integrity MC990 X Server HPE Integrity rx2800 i6 Server HPE Integrity Superdome HPE SGI 8600 System HPE Solutions for SAP HANA (TDI)	HPE Apollo 4200 Gen9/Gen10 Servers HPE Apollo 4200 Gen10 LFF Server for BlueData Software HPE Apollo 4510 Gen10 System HPE D2220sb/D2500sb Storage Blade HPE D3000/D6020/D8000 Disk Enclosures HPE Scalable Object Storage with Scality RING HPE SimpliVity 2600 HPE SimpliVity 325/380 Gen10 HPE Storage File Controllers HPE StoreEasy 1460/1560/1650/1660/1860 Disclaimer: This may not be a complete listing of applicable servers

Standard Features

Ideal for

The HPE Smart Storage Hybrid Capacitor is ideal for:

- Environments with higher operating temperatures.
- Customers who have a "no battery" requirement or applications/environments such as ASHRAE, NEBs, Telco and certain data center or system environments where elevated internal system temperatures are experienced.

Key Features

- High reliability, even in higher temperature environments.
- No batteries, not a Class 9 Dangerous Good product (no hazardous material disposal, no battery shipping requirements).
- A single module supports up to three (3) Smart Array Controllers.
- Charges to full capacity in ~3 minutes after discharge.
- Capable of operating in higher temperatures with no impact to service life.

The HPE Smart Storage Hybrid Capacitor is used to provide backup power to the HPE storage array controller in the event of power loss. The hybrid capacitor module starts up automatically and charges the capacitors when charge is required. In the event of a power loss, the capacitor pack will switch to discharge mode and supply energy to write the cache contents to NAND memory.

For more information on best practices see HPE Smart Array Controller User Guide.

Notes:

- The HPE Smart Storage Hybrid Capacitor is only supported on Gen10 servers or newer. Before installing the hybrid capacitor module, verify that the system BIOS meets the minimum firmware requirements to support the capacitor pack.
- Not for use with Server that use NVDIMMs.
- For more information on updating firmware, see the Intelligent Provisioning User Guide on the Hewlett Packard Enterprise website (http://www.hpe.com/info/intelligentprovisioning/docs).
- To get the latest firmware and software updates, download the Service Pack for ProLiant (SPP) from the Hewlett Packard Enterprise website (http://www.hpe.com/servers/spp/download).

Standard Features

HPE 96W Smart Storage Battery or Smart Storage Hybrid Capacitor?		
	96W Battery	**Smart Storage Hybrid Capacitor**
Gen 10 or newer	Yes	Yes
Controller Support	Yes	Yes
NVDIMM Support	Yes	No
Max. Device Support	Up to 24 NVDIMM and/or Smart Array Controllers	Up to 3 HPE Smart Array Controllers
Discharge to > Charge	Hours	Minutes
Operating Environments	Climate controlled environments	Higher temperature environments such as NEBs, ASHRAE, or Telco
Class 9 Dangerous Goods	Yes	No

Configuration Information

Smart Array Controller support Supports up to 3 HPE Smart Array P-class Controllers	**Description**	**Part Number**
	HPE Smart Array P816i-a SR Gen10 (16 Int Lanes/4GB Cache/SmartCache) 12G SAS Modular LH Controller	869083-B21
	HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS Modular LH Controller	869081-B21
	HPE Smart Array P408i-p SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS PCIe Plug-in Controller	830824-B21
	HPE Smart Array P408e-p SR Gen10 (8 External Lanes/4GB Cache) 12G SAS PCIe Plug-in Controller	804405-B21
	HPE Smart Array P816i-a SR Gen10 (16 Internal Lanes/4GB Cache/SmartCache) 12G SAS Modular Controller	804338-B21
	HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS Modular Controller	804331-B21

Server support For up to (3) controllers	**Family**	**Gen**	**Module cable**	**Description**
	P02377-B21			
	DL360	G10	145mm	HPE Smart Storage Hybrid Capacitor with 145mm Cable
	DL380	G10	145mm	HPE Smart Storage Hybrid Capacitor with 145mm Cable
	DL560	G10	145mm	HPE Smart Storage Hybrid Capacitor with 145mm Cable
	DL385	G10	145mm	HPE Smart Storage Hybrid Capacitor with 145mm Cable
	DL325	G10	145mm	HPE Smart Storage Hybrid Capacitor with 145mm Cable
	ML30	G10	145mm	HPE Smart Storage Hybrid Capacitor with 145mm Cable
	DL160	G10	145mm	HPE Smart Storage Hybrid Capacitor with 145mm Cable
	DL180	G10	145mm	HPE Smart Storage Hybrid Capacitor with 145mm Cable
	P02381-B21			
	ML110	G10	260mm	HPE Smart Storage Hybrid Capacitor with 260mm Cable
	ML350	G10	260mm	HPE Smart Storage Hybrid Capacitor with 260mm Cable
	Synergy 480	G10	260mm	HPE Smart Storage Hybrid Capacitor with 260mm Cable
	Synergy 660	G10	260mm	HPE Smart Storage Hybrid Capacitor with 260mm Cable

Configuration Information

Firmware Support		
Minimum requirements for your HPE Server.	**Product**	**Minimum firmware version**
	HPE servers with Intel processors (BIOS)	2.00
	HPE servers with AMD processors (BIOS)	1.40
	HPE Smart Array SR controllers (firmware)	1.90
	HPE Smart Array MR controllers (firmware)	24.23.0-0041

For more information on updating firmware, see the Intelligent Provisioning User Guide on the Hewlett Packard Enterprise website (http://www.hpe.com/info/intelligentprovisioning/docs).

To get the latest firmware and software updates, download the Service Pack for ProLiant (SPP) from the Hewlett Packard Enterprise website (http://www.hpe.com/servers/spp/download).

Technical Specifications

Storage element	Hybrid capacitor	
Voltage	2.5-3.6v	
Discharge/charge	Full capacity in approx. 3 minutes after discharge	
Maintenance	Maintenance-free	
Operating Temperature	10°C to 60°C environment	
Storage Temperature	10°C to 35°C, less than 65% relative humidity	
	Notes: Sudden temperature change or high humidity may cause deterioration of its characteristics.	
Shelf Life	When stored at 10 ~ 35°C and less than 65% relative humidity, shelf life is 20 months minimum. (100% State of Charge)	
Relative Humidity	65% or less (non-condensing) for storage	
Operating Altitude	from sea level, of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft).	
Non-operating Altitude	Up to 15,240m (50,000 feet) above sea level	
Leakage Current	<2.0 uA in Ship/Storage mode	
Safety Conformance or Certifications	UL, CB, KCC, CE	
EMC (Class A)	FCC 47 CFR Part 15 Subpart B and AS/NZS CISPR 32	
Unit Dimensions (WxDxH)	5.46”(138.65mm)x1.13”(28.8mm)x0.76”(19.36mm)	
Unit Weight	P02377-B21	85g (+5/-10)
	P02381-B21	90g (+5/-10)
Warranty	3 years parts only	
Warranty Upgrade Options	– Response - Upgrade on-site response from next business day to same day 4 hours. – Coverage - Extend hours of coverage from 9 hours x 5 days to 24 hours x 7 days. – Duration - Select duration of coverage for a period of 1, 3, or 5 years. Warranty upgrade options can come in the form of Care Packs HPE Services operational, which are sold at the HPE System level to which this product attaches.	

Service and Support

For the most up-to-date information on HPE Services, please refer to the HPE Services – Supplemental QuickSpecs, which provides a comprehensive and regularly updated overview of available services.

Related Options

HPE Smart Storage Battery

HPE 96W Smart Storage Lithium-ion Battery with 145mm Cable Kit P01366-B21

Notes: 96W Battery with 145mm cable is for ProLiant Gen10 DL servers and the ProLiant XL170r and XL190r Gen10 servers.

Notes: Smart Array Gen10 controllers are supported by the HPE Smart Storage Battery, which supports multiple devices and is sold separately.

Notes: Although the hybrid capacitor module is mechanically compatible with the 96W Smart Storage Battery (P01366-B21 and P01367-B21), it cannot be used together in the same configuration.

HPE 96W Smart Storage Lithium-ion Battery with 260mm Cable Kit P01367-B21

Notes: 96W Battery with 260mm cable is for ML110 and ML350 Gen10 servers

Notes: Smart Array Gen10 controllers are supported by the HPE Smart Storage Battery, which supports multiple devices and is sold separately.

Notes: Although the hybrid capacitor module is mechanically compatible with the 96W Smart Storage Battery (P01366-B21 and P01367-B21), it cannot be used together in the same configuration.

HPE Smart Array SR SmartCache

HPE Smart Array SR SmartCache (Single Key/Single Server) LTU D7S26A

Single-Server License

Used to purchase a license for one server.

Contains one license per server, a printed license entitlement certificate, end user license agreement, and license key installation card **delivered via physical shipment**. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HPE Software Technical Support Services.

Flexible-Quantity License

Used to purchase multiple licenses with a single activation key.

Contains license(s) for a customer defined quantity of servers, a license entitlement certificate for the quantity of licenses purchased, end user license agreement, and license key installation card **delivered via physical shipment**. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HPE Software Technical Support Services.

Flexible-Quantity Electronic License

Used to purchase multiple licenses with a single activation key.

Contains license(s) for a customer defined quantity of servers, a license entitlement certificate for the quantity of licenses purchased, end user license agreement, and license key installation information **delivered via e-mail.** The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HPE Software Technical Support Services.

Notes: For more information please visit: http://www.hpe.com/servers/smartcache

HPE Smart Array SR Secure Encryption

HPE Smart Array SR Secure Encryption (Data at Rest Encryption/per Server Entitlement) E-LTU Q2F26AAE

For use with SmartRAID SR controllers only

Notes: HPE Smart Array SR Secure Encryption licensing is based on the number of servers requiring encryption for direct attached storage. For more information visit: http://www.hpe.com/servers/secureencryption

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Summary of Changes

Date	Version History	Action	Description of Change
21-Sep-2026	Version 5	Changed	QuickSpecs maintenance updates.
02-Feb-2026	Version 4	Changed	New branding applied to document.
04-Dec-2023	Version 3	Changed	Service and Support section was updated.
15-Nov-2021	Version 2	Changed	Service and Support section was updated.
02-Apr-2019	Version 1	New	New QuickSpecs.

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