MODULAR THREE-PHASE UPS SYSTEM

DPA 500
100 kW – 3 MW
The modular UPS – now up to 3 MW

The UPS for those who need zero downtime

ABB's DPA 500 is a high-power, modular and transformer-free UPS system for organizations who need zero downtime. The UPS is built using true online double conversion technology and provides low cost of ownership.

True modularity up to 3 MW
Now you can have a UPS size to exactly fit your needs: The DPA 500 is the only modular UPS on the market that can easily be scaled up to provide 3 MW of clean, reliable power.
This scalability means that there is no need to over-specify the original configuration as power modules can simply be added, as needed, in the future.

True parallel architecture
Reliability and availability are ensured by the DPA 500's proven Decentralised Parallel Architecture (DPATM). Each module contains all the hardware and software required for full system operation. They share no common components. Each UPS module has its own independent static bypass, rectifier, inverter, logic control, control panel, battery charger and batteries. With all the critical components duplicated and distributed between individual units, potential single points of failure are eliminated.

5x Online Swap Modularity

Modules added to expand capacity are available right away – and existing modules remain online throughout the upgrade.

Highlights:
- 100 kW rated power module
- 500 kW rated power in single frame
- Extended power range: from 100 kW to 3 MW
- Unity output power factor (kVA = kW)
- AC-AC efficiency up to 96 %
- Efficiency in eco-mode ≥ 99 %
- Online Swap Modularity (OSM)
- Online serviceability
- Top or bottom cable entry (standard)
- Built-in back-feed protection (standard)
- Graphical display on system level
- DPA diplays in each module
- Maintenance bypass switch (optional)

The lowest total cost of ownership

The DPA 500 boasts the lowest cost of ownership of any UPS system by offering energy efficiency, scalability and ergonomic design to enable easy serviceability.
It can be sized to align closely with prevailing IT requirements, but can be added to incrementally as IT needs grow. This means that you only power and cool what you need. The resulting savings in power usage over the service life of the UPS are substantial.
Rack-mounted configurations can be right-sized by inserting or removing 'online-swappable' modules while the systems remain online, enabling power to be added as requirements grow without any footprint penalty. This makes servicing simple as modules can be replaced without powering down.
Together with the excellent efficiency rating (up to 96 %) of the product, all these factors gives the DPA 500 the lowest total cost of ownership of any similar UPS system.

6x frames in parallel can be scaled to provide 3 MW of clean and reliable power.

Sized to fit your needs
Designers often over-specify UPS systems to take account of future demand growth. With the DPA 500, modules can simply be added in parallel to increase the system's total capacity. The DPA delivers power protection from 100 to 500 kW (one to five modules) in a single cabinet.
Cabinets can operate in a parallel configuration to build a system of up to 3 MW.
The DPA 500's horizontal and vertical scalability allows:

- Flexible power upgrades and downgrades
- Easy maintenance
- Pay as you grow

Scalable up to 3 MW

Vertical scalability: one to five modules in one single cabinet

Horizontal scalability: cabinets in parallel configuration up to 3 MW

Protecting power has never been easier

True, online-swap modularity enables the safe removal and / or insertion of DPA modules without risk to the critical load and without the need to power down or transfer to raw mains supply. This unique feature directly addresses today's requirement for continuous uptime. The ability to online-swap modules in a DPA system significantly reduces its mean time to repair (MTTR) and simplifies system upgrades. The modular approach pays off too when it comes to serviceability and availability – online swapping of modules means you don't have to switch off or switch to bypass during replacements, so there is no downtime.

Installation and service is easy too: The straightforward concept of the DPA simplifies every step of the deployment process, from planning, through installation and commissioning to full use. Flexible set-up and fast maintenance means lower operating and maintenance costs. The UPS is fully front serviceable.

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01 Online-swappable modules.

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02 Every UPS module has a separate display. Additionally, a touchscreen display on the system level offers the opportunity of directly monitoring key functions. With both displays in place (module and system level), the UPS offers full user friendliness without making compromises on robustness.

Availability
Mean time between failures (MTBF) and mean time to repair (MTTR) are common parameters in the UPS industry and both impact system availability. Modular UPS designs minimizes the system‘s MTTR. ABB’s Decentralised Parallel Architecture allows the modules to work as one system but without interdependence. In the unlikely event that one UPS module were to fail, the overall system will continue to operate normally, but with one module fewer of capacity. The failed module is fully disconnected and cannot impact the operating modules. Quick and simple repair by swapping modules, which can be held as spares on-site or at a nearby service center, minimizes the system‘s MTTR.
This online-swap technology, along with significant reductions in repair time, can also achieve the so-called six nines availability (99.9999 percent) – highly desirable for data centers in pursuit of zero downtime.
Not only does this improve availability but it also reduces cost as service engineers spend less time on-site and any risks of data or production loss are minimized. Inventory levels of specialist spare parts are reduced.

up to **3** MW

High efficiency
The scalability of the modular architecture can deliver major reductions in electricity consumption and CO2 emissions. Not only that, but a class-leading energy efficiency of up to 96 % significantly reduces system running costs and cooling costs. But, more importantly, the efficiency is optimized with a very flat efficiency curve that enables significant savings under every working condition.

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Uninterrupted uptime for Tier IV Data Centers

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01 Reference example of a data center application:
The system flexibility allows upgrading or downgrading power capacity according to your needs.
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02 Extra modules can be added while the system is powered up to make it up to 3 MW.

Our modern society is now largely built on a foundation of data. Health authorities, banks, government departments, retail outlets and almost every other organization that touches our lives rely on the safe storage of enormous amounts of data. And safe data storage needs a rock-solid supply of power such as that shown in this reference example.
In a Tier 4 data center, it must be possible to undertake infrastructure work without disrupting the critical load. This requires simultaneously active distribution paths, typically in a system + system configuration. Electrically, this means two separate UPS systems in which each system has N + 1 redundancy. The sample reference scenario, 1200 kW Tier 4, illustrates one possible example of how the DPA 500 can be used to create a high-performance IT infrastructure.

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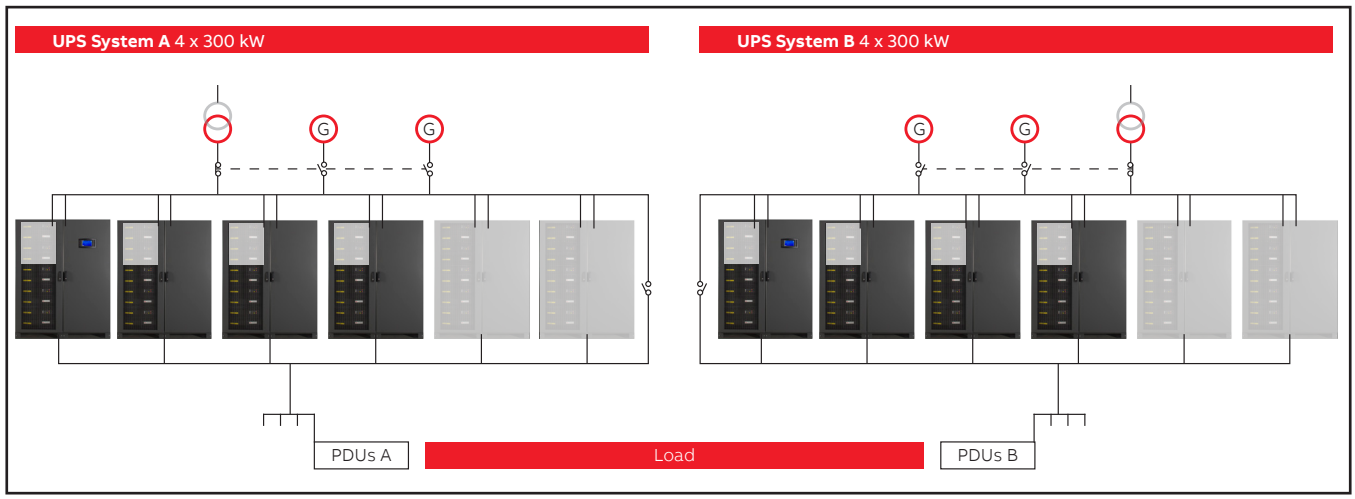

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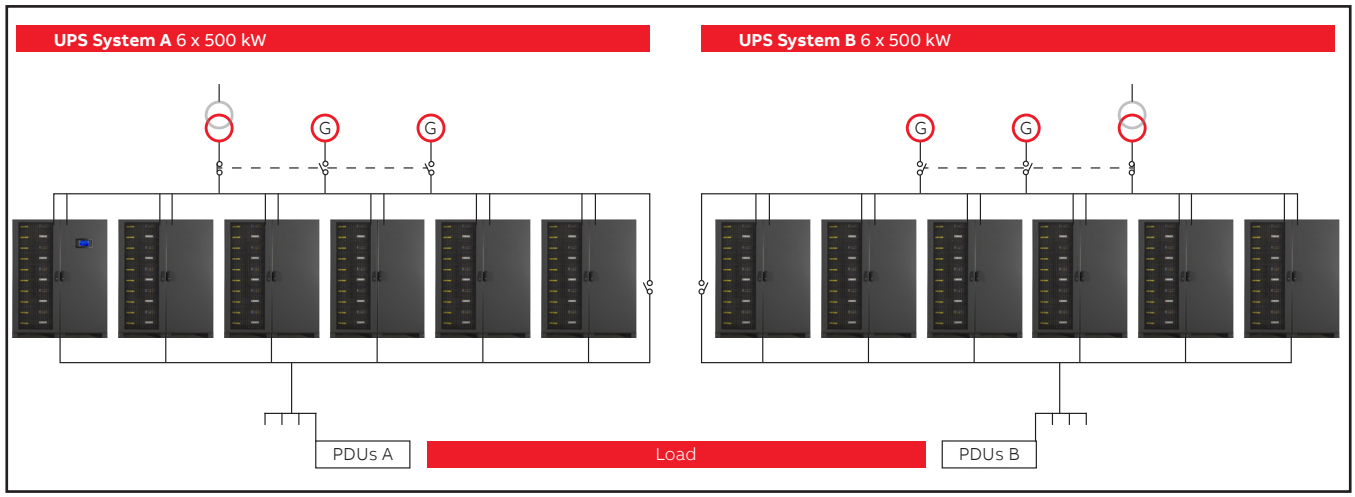

Technical specifications

GENERAL DATA	
System power range	100 kW – 3 MW
Nominal power / module	100 kW
Nominal power / frame	500 kW
Output power factor	1.0
Topology	Double conversion, transformer-free, modular, Decentralized Parallel Architecture
Parallel configuration	Up to 5 modules in one frame (500 kW) / up to 6 frames in parallel (3 MW)
Cable entry	Bottom or top as standard
Serviceability	Fully front serviceable
Back-feed protection	Built-in as standard
INPUT	
Nominal input voltage	3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N
Voltage tolerance (referred to 400 / 230 V)	For loads < 100 % (–10 %, +15 %), < 80 % (–20 %, +15 %), < 60 % (–30 %, +15 %)
Input distortion THDi	< 3.5 % at 100 % load
Frequency range	35 – 70 Hz
Power factor	0.99 @ 100 % load
Walk in / Soft start	Yes
OUTPUT	
Rated output voltage	3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N
Voltage tolerance (referred to 400 / 230 V)	< ±1 % with static load / < ±4 % with step load
Voltage distortion	< 2 % with linear load / < 4 % with non-linear load
Frequency	50 or 60 Hz (selectable)
EFFICIENCY	
AC-AC	Up to 96 %
In eco-mode	≥ 99 %
ENVIRONMENT	
Protection rating	IP 20
Storage temperature	–25° – +70°
Operating temperature	0° – +40°C
Altitude (above sea level)	1000 m without de-rating
BATTERIES	
Number of 12V blocks / string	Flexible number from 40 – 50 blocks
Types	VRLA, vented lead-acid, NiCd
Battery charger	Decentralized charger per module
COMMUNICATIONS	
User interface	Graphical touch screen (one per frame as standard) Decentralized LCD + mimic diagram (one per module as standard)
Communication ports	USB, RS-232, voltage-free contacts, SNMP (optional)
Customer interface	Remote shutdown, gen-set interface, external bypass contact
COMPLIANCY	
Safety	IEC / EN 62040-1
EMC	IEC / EN 62040-2
Performance	IEC / EN 62040-3
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001
WEIGHT, DIMENSIONS	
Weight	approx. 975 kg (500 kW system without batteries)
Dimensions WxHxD	1580 x 1975 x 945 mm

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