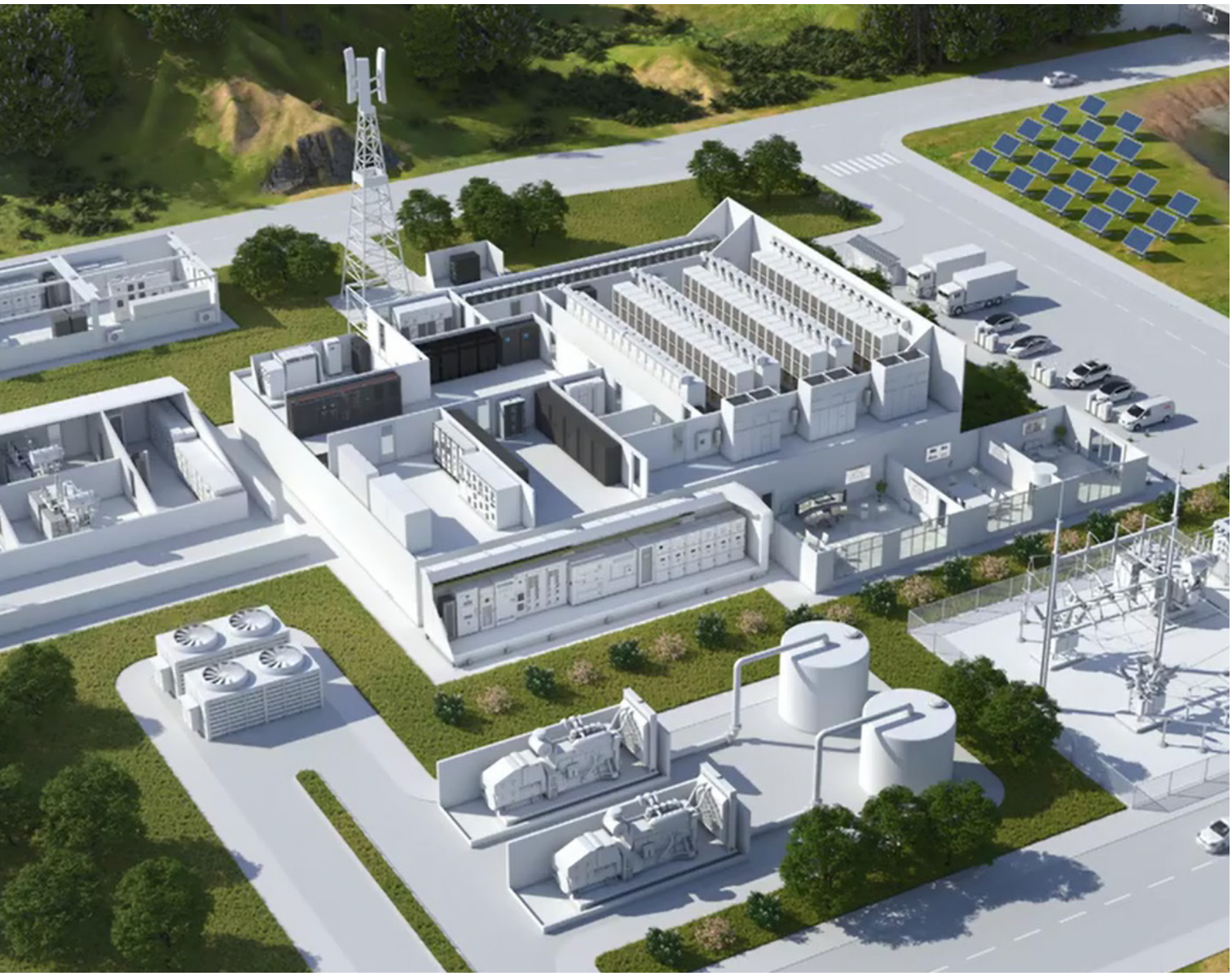
MODULAR THREE- PHASE UPS IEC 400 V

MegaFlex DPA (250 kW - 6000 kW)

a complete reliable and efficient product family for mid-high UPS power protection



- Market-leading energy efficiency up to 2000 kW frame
- Modular UPS system with most flexible capability up to 6000 kW
- Footprint optimal performance with true front access

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Meet the best and most reliable UPS on the market

The MegaFlex IEC UPS Family

The on-line double conversion MegaFlex DPA UPS provides the best power protection for your critical infrastructure from 250 kW to 6000 kW.

As the world moves ever more online and digitalizes, the requirement for safe, reliable and easily accessible data storage has risen exponentially. The vast collections of servers and storage devices housed in data centers contain an immense amount of critical data used by banks, commerce, healthcare and governments, and a whole host of industries, including the many rapidly growing social media sites.

Data storage facilities are driven by economies of scale, which has resulted in a trend toward massive, single-location data centers. These power-hungry sites consume significant amounts of power – often well into the tens of megawatts – and rely on a power supply quality and reliability much better than can be provided by the public grid.

This need for power quality and reliability creates a demand for best-in-class power protection schemes.

ABB's MegaFlex DPA UPS is specifically designed to provide such top-class, cost-effective power protection for critical high-density computing environments across private and public enterprise, as well as data centers for colocation, hosting cloud and telecommunications.

The modular UPS is based on ABB's decentralized parallel architecture (DPA™). This innovative system means every UPS module is practically its own UPS with all the essential functional units needed for independent operation. The scalability of DPA means the UPS can be sized exactly to fit prevailing needs and modules can simply be added as requirements grow in a safe way. This means that you only purchase, power, service and cool what you need.
In the unlikely event of one UPS module failing, the other modules (in an N+1 setup) can take up its load until a new module is inserted. Modules can be added or removed safely without powering down, thus cutting service costs. Modularity and scalability help minimize the cost of ownership, but costs are held down too by implementing designs that have best-in-class energy efficiency.

Footprint savings of

45%

Outperforms its competitors up to 2000 kW frame with VFI system efficiency of up to

97.4%

Design life of up to

15 years

reduces total cost of ownership

DPA provides full redundancy and fault tolerance in a way that is unique amongst UPS vendors. This results in reduced initial costs and running costs as well as an increased system reliability and availability that outperforms every other modular UPS solution on the market.

01

Flexible approach

- Easily scalable modular system
- Up to 2000 kW power protection in a single UPS frame with add-on modules
- Redundant power capabilities: 1250 kW N+1, 1750 kW N+1
- Easy and safe upgrade for power demand increases
- Decentralized or centralized static bypass architecture available
- Can be paralleled with additional systems

02

Optimized efficiency

- Best-in-class efficiency up to 97.4 percent (VFI) at system level up to 2MW frame size
- Minimized energy losses impacting on lowering TCO, reducing heat dissipation and saving OPEX
- Smart load-sharing optimizes energy consumption
- Optimizing dynamically the system efficiency under low load conditions with ABB Xtra VFI
- Reducing emissions through highly efficient solution

03

Reliable operations

- DPA™ technology maximizing power availability
- Online-swappable power modules for continuous uptime
- Automatic isolation of any faulty power module
- Fault-tolerant UPS design for uninterrupted power increasing MTBF
- Proven technology from world-leading power protection pioneers

04

High serviceability

- Each module is independently functional with inherent redundancy between UPS modules
- Plug-in power modules support easy, safe connections
- Pre-engineered power frames eliminate wiring entirely
- Plug-in design makes it easy and safe to online-swap reducing MTTR
- Cable-free design for online swapping and upgrade power modules

01

The flexible approach

As your power requirements increase, you need a UPS that grows with your infrastructure. With three or four power frame slots and connection frames rated for 1000 kW, 1500 kW or 2000 kW, the MegaFlex DPA UPS offers a flexiblemechanical layout that can adapt to your current system and future powerexpansion.

Flexible approach

- Easily scalable modular system
- Power capacity can be optimized to match variable loads
- Easy upgrade for power demand increases
- Ease-of-use for operations personnel
- Simple maintenance
- Can be paralleled with additional systems

250 kW

2000 kW

750 kW N+1 to **1000 kW**

1000 kW N+1 to **1500 kW** or 1750 kW N+1 to **2000 kW**

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01 Flexible mechanical layout of MegaFlex DPA IEC (DPA frame 1500 kW picture)

02

Optimized efficiency

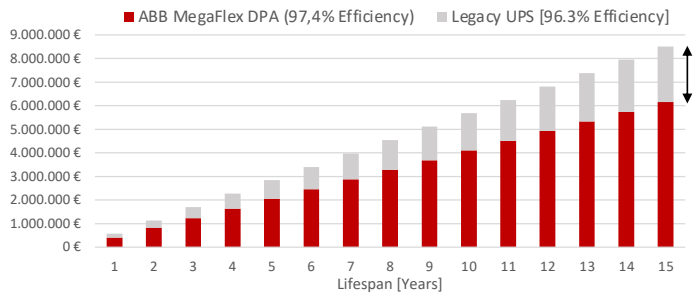
Running a facility with high energy demands means that every percentage point of energy saved represents significant cost savings and a reduction in CO_2 emissions.

Optimised efficiency

- Best-in-class power density versus efficiency ratio on the market
- VFI double conversion operating mode with efficiency of up to 97.4 percent at system level, rising to 99.4 percent efficiency in VFD eco mode
- Up to 45 percent footprint savings with ultra-high kW per m2
- Optimized efficiency in partial-load conditions
- Optimized TCO (total cost of ownership)
- Contributing to a lower carbon global data center industry

Intelligent energy management
Because data center power requirements can change over time, a high degree of adaptability is required to effectively manage varying demands. Traditional UPS systems can fare poorly when the load is less than 25 percent of full system capacity. The MegaFlex DPA UPS Xtra VFI operating mode is a smart way to minimize losses and improve efficiency when running in the default double conversion mode. When Xtra VFI mode is enabled, it automatically adjusts dynamically the number of active modules according to the power load requirement. Modules that are not needed revert to standby, ready to reactivate if the load increases.

Example: **10 MW IT load data center**; 2N design, over **15 years** of UPS service life



Revenues & Cash-back

Up to 38% energy saving

saving 2,4 M€ direct eff. energy lost

Recover up to 105% initial UPS investment (excl. Batteries)

Sustainability

Reduce **3200** tons CO_2 eq.

>1000 passenger vehicules driving 1 year

>7300 barrels of crude oil consumed

> 2200 private homes electricity demand for a year

03

Reliable operations

Critical, high-density computing environments demand a combination of guaranteed uptime and the highest safety standards to ensure both assets and people are protected.

Reliable operations

- Fault tolerant system, no single point of failure
- Automatic power module self-configuration and firmware updates
- Slide-in power modules for simple and safe installation
- Full lifetime service from ABB-trained specialists or certified partners
- Enhanced power measurement, providing comprehensive data to track energy consumption and status of internal components allowing pro-active decision-making maintenance actions

04

High serviceability

Serviceability has never been easier than with the MegaFlex DPA UPS's modular design. Each component has been expertly engineered to optimize accessibility and to reduce the possibility of human error.
Designed for ease of use from the first moment of installation, the module cabinets are easily transported to the UPS and slide into place.
Docking connectors eliminate the threat of cabling faults during installation while entry points at the front and rear of the IP20-protected cabinet make connecting mains cabling convenient, safe and worry-free.
The fan array is mounted on a pull-out drawer for ease of access with failure detection and speed regulation provided as standard.

High serviceability

- Plug-in power modules support easy, safe connections
- Pre-engineered power frames and power distribution frame eliminates wiring entirely
- Standardization of the modules

The MegaFlex DPA portfolio

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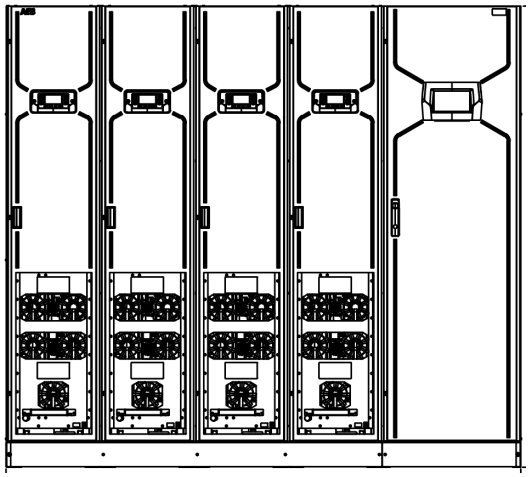
01 MegaFlex DPA IEC 1000 kW - RSF
02 MegaFlex DPA IEC 1000 kW - LSF
03 MegaFlex DPA IEC 1500 kW

The MegaFlex DPA UPS comes in two variants:

- MegaFlex DPA
- MegaFlex DPA CSB

The difference between these two variants is that the MegaFlex DPA features a distributed static bypass switch, whereas the MegaFlex DPA CSB has a centralized static bypass switch.



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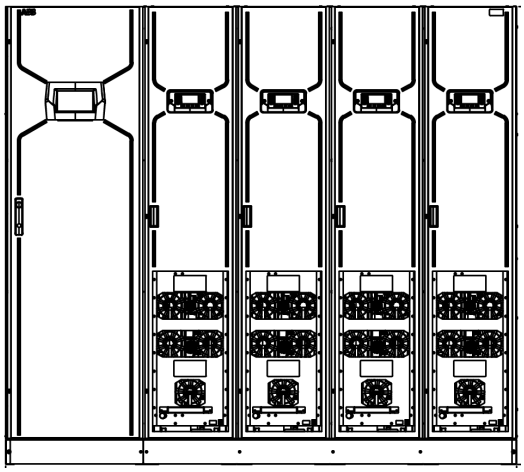

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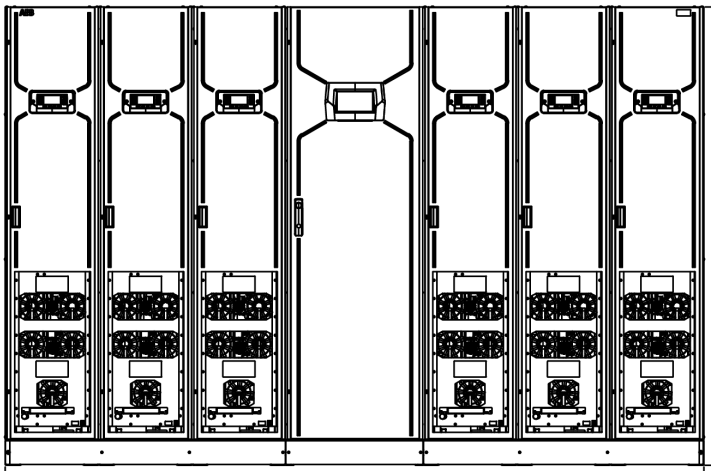
02

Power rating	kW	750 kW (N+1), 1000 kW
Dimensions (w x h x d)	mm	2235 x 2000 x 1000
Weight without power modules	kg	550
Weight with power modules	kg	1940



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03

Power rating	kW	1500 kW
Dimensions (w x h x d)	mm	3045 x 2000 x 1000
Weight (without power modules)	kg	845
Weight (with power modules)	kg	3250

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01 MegaFlex DPA CSB IEC 1500 kW
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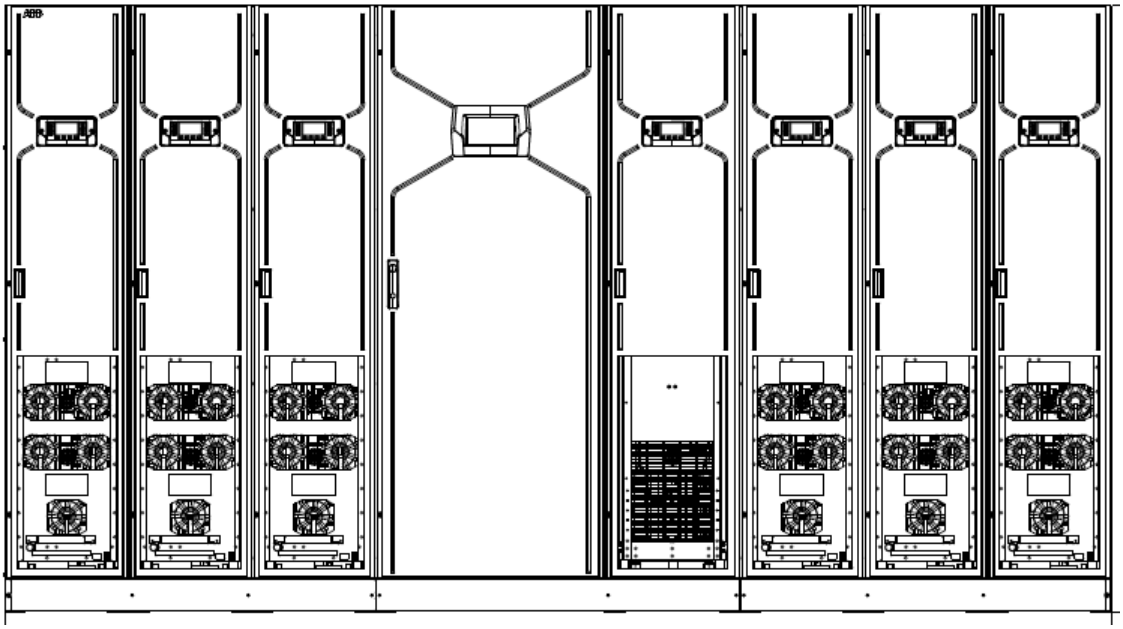
02 MegaFlex DPA CSB IEC 2000 kW



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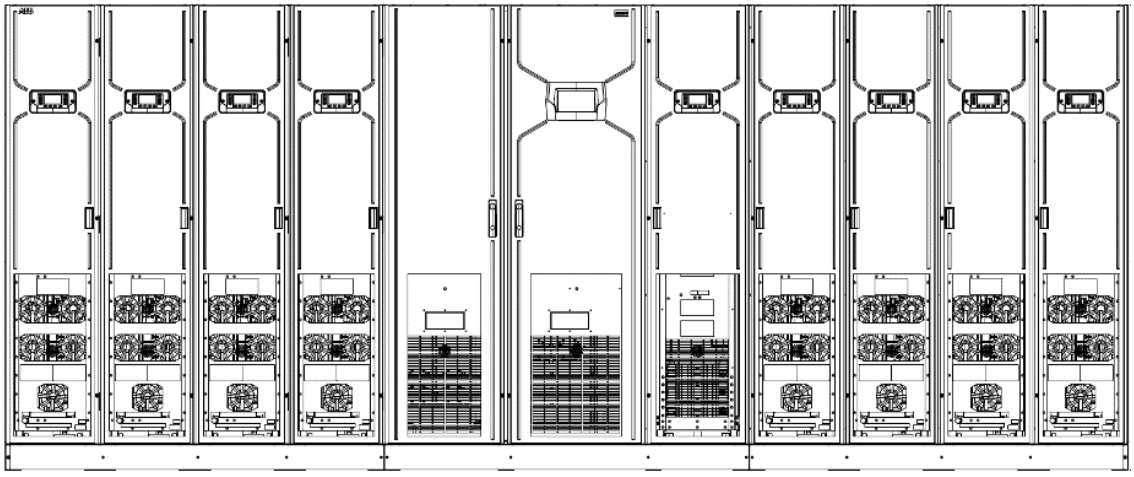
Power rating	**kW**	**1250 kW (N+1), 1500 kW**
Dimensions (w x h x d)	mm	3645 x 2000 x 1000
Weight (without power modules & CSB)	kg	1200
Weight (with power modules & CSB)	kg	3566



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02

Power rating	**kW**	**1500 kW (N+1), 1750 kW**	**1750 kW (N+1), 2000 kW**
Dimensions (w x h x d)	mm	4830 x 2000 x 1000	
Weight (without power modules & CSB)	kg	1494	
Weight (with power modules & CSB)	kg	3950	4600

The MegaFlex DPA IEC 400 V
With distributed bypass

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01 ABB UPS power module with distributed bypass

The MegaFlex DPA IEC 400 V double conversion online modular UPS with distributed bypass benefits from all the advantage of ABB's innovative DPA. The key features of this UPS are

- Distributed static bypass switches
- Each UPS module can operate autonomously
- Redundant critical components and paths serving the load; no single points of failure
- UPS modules can be online-swapped without impacting the load.
- Redundant power configuration (N+1) with common or separate batteries
- Smart load sharing between the active UPS modules
- Continuous and redundant control and monitoring on module and system level.

Power capacity and redundancy can be tailored to suit with up to 6000 kW power protection available in a single UPS system by paralleling power modules of 250 kW. Additional power modules can be slid in, adding power capacity or providing internal redundancy (N+1).

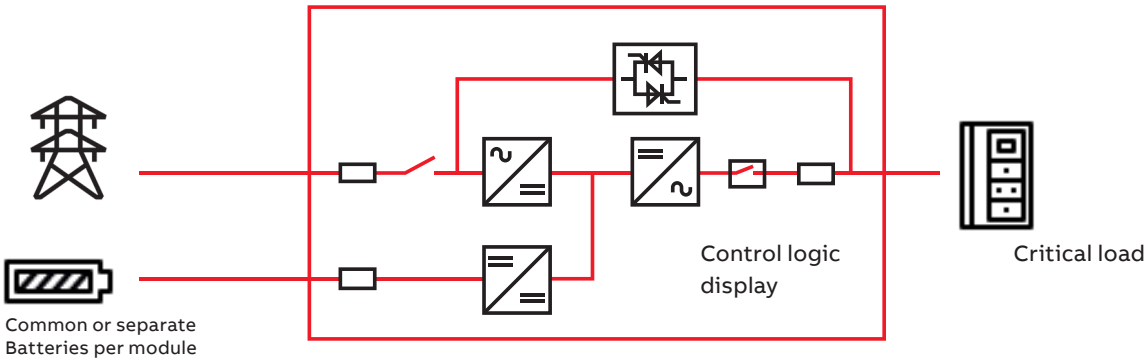
With a 97.6 percent UPS module efficiency, 97.4 percent system efficiency in double conversion mode and 99 percent efficiency in ECO mode, the MegaFlex DPA family are sure to cut your energy bill. The Xtra VFI double conversion mode improves efficiency under low-load conditions, making further savings.

Simply and safe installation is guaranteed as the UPS is provided with pre-engineered power frames that accommodate the modules and busbars that eliminate wiring entirely. Slide-in power modules with safe, plug-in connections remove any electrical hazard. To make external cabling easier, top or bottom cable entry can be chosen.

Maintenance and monitoring is easy too: Module replacement takes just a few minutes and maintenance can be performed in the comfort and safety of a separate room. Modules can be safely re-inserted without powering down. Real-time monitoring is provided by the local system display or a display on each module. The system can also be monitored remotely via the web application. ABB Ability™ offers a complementary remote monitoring platform and management resources for proactive maintenance.

A variety of options for energy backup delivers the flexibility that users seek: The MegaFlex DPA family UPS systems can be installed with module-specific backup energy media for highest availability or a common battery for the whole UPS rack to optimize cost. The MegaFlex DPA UPS family is also compatible with multiple lithium-ion batteries – a good option for those who look for further space savings without compromise in backup time. In addition, the system is ready for new energy storage technologies available in the market.

ABB PowerExchanger is a function available on the MegaFlex DPA family enabling the UPS to interact with the grid and supply (upon external request) ancillary grid services. Through this frequency regulation function (FRF) the UPS can reduce/increase the input power flowing from the grid to the UPS or even reverse the flow and inject power back into the grid (back-feed), while maintaining constant output power.



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MegaFlex DPA IEC CSB 400 V
With centralized bypass

The MegaFlex DPA IEC CSB 400 V double conversion online modular UPS with centralized bypass benefits from all the advantage of ABB's innovative DPA. The key features of this UPS are

- Centralized static bypass switch
- Each UPS module can operate autonomously
- Redundant critical components and paths serving the load; no single points of failure
- UPS modules can be online-swapped without impacting the load.
- Redundant power configuration (N+1) with common or separate batteries
- Smart load sharing between the active UPS modules
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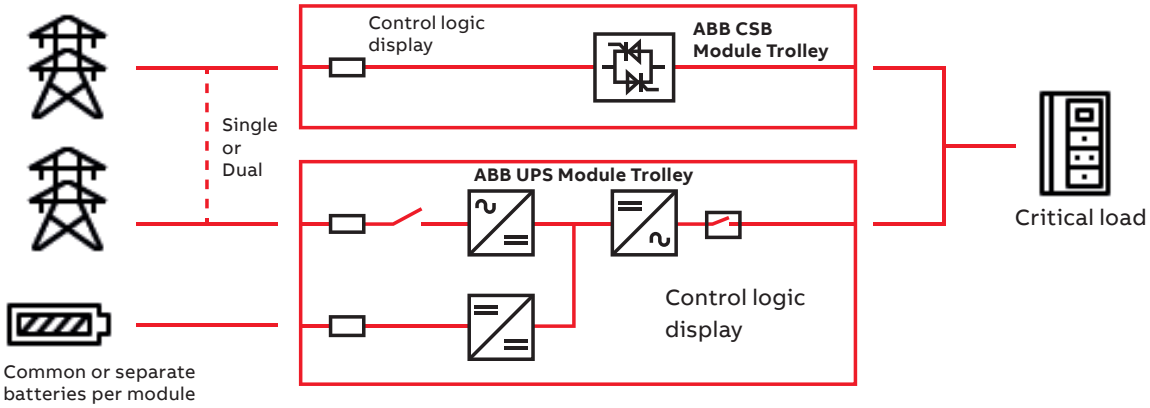
01 ABB UPS power module with central static bypass

ABB's new centralized static bypass (CSB) uses multiple thyristor blocks as a central static bypass, which is sized for the total combined UPS module capacity. The bypass switching devices use N+1 thyristors, which means the bypass itself has redundancy and the higher MTBF allows the UPS to function when one of the thyristors has failed, whereas conventional bypasses do not have this feature. Equal current sharing between the thyristor elements is achieved using a unique, patented magnetic coupling system (externally certified).

The CSB features a has a higher I2t energy let-through capability.

On the CSB variant, separate or common input feeds to the rectifier and static bypass can be implemented.



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The MegaFlex DPA as reliable and sustainable UPS

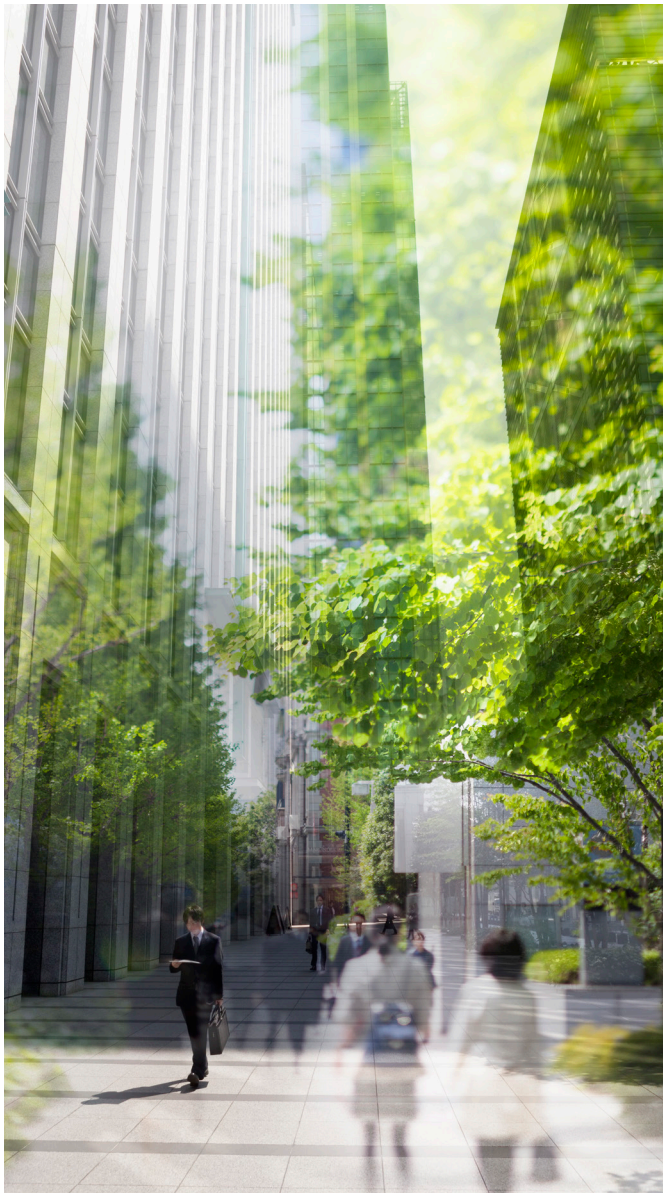
ABB has secured the PEP ecopassport label for its MegaFlex DPA. The UPS has also qualified for ABB's EcoSolutions™ label – the product label of ABB's commitment to circularity. This accreditation enables data center operators to specify UPS equipment with full confidence in its environmental credentials.

With major data center operators signing the European Climate Neutral Data Centre Pact, which commits to achieving net zero carbon emissions by 2030, the sustainability credentials of the electrical equipment they purchase are becoming increasingly important. As a major supplier of power protection equipment to the data center industry, ABB has responded to this drive to achieve ambitious sustainability targets by securing a prestigious PEP ecopassport label for its MegaFlex DPA. In parallel, MegaFlex DPA has also qualified for ABB's EcoSolutions label – the product label of ABB's commitment to circularity. This type of accreditation enables eco-efficient electrical equipment to be specified with confidence by any customer whose mission is to go green.

The PEP ecopassport and the MegaFlex DPA UPS
The PEP association consists of manufacturers, users, institutional and professional associations. It is responsible for implementing the PEP ecopassport® program, which verifies stringent performance criteria throughout a product's life cycle: manufacturing, distribution, installation, use and end-of-life. Providing an international reference framework, the program ensures reliable, transparent, comparable and verified environmental performance indicators for electrical, electronic, heating and cooling equipment.

MegaFlex DPA and the ABB EcoSolutions label
ABB takes a company-wide approach to circularity. By 2030, at least 80 percent of the entirety of our products and solutions will be covered by our circularity approach and evaluated against a clear set of key performance indicators (KPIs), corresponding to each stage of the product lifecycle.

ABB EcoSolutions is the product label of our circularity approach. The label signifies circularity value and Eco transparency of the products through an independently verified Environmental Product Declaration.



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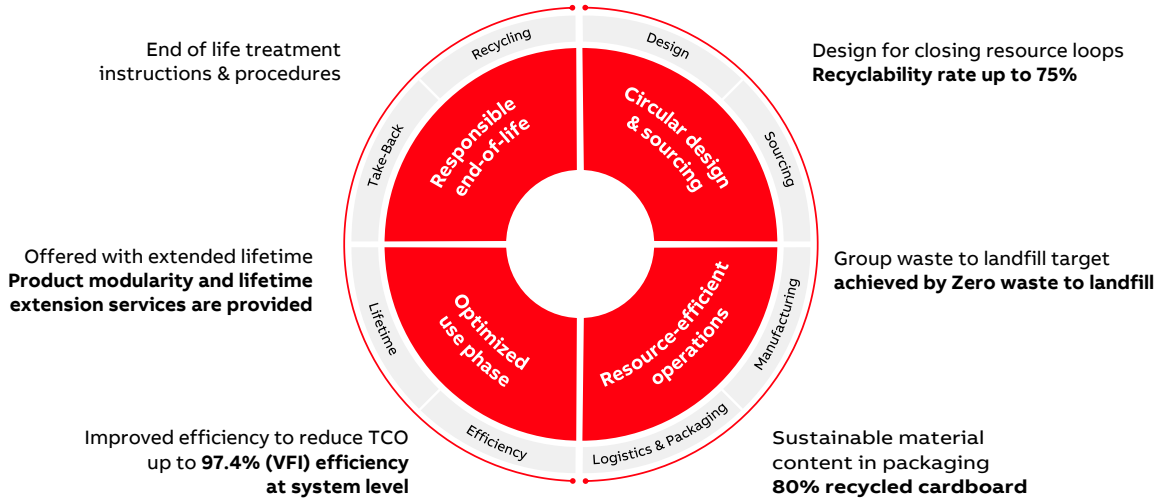
01 The ABB EcoSolution label - Circular Value

The MegaFlex DPA as reliable and eco-friendly UPS

ABB is proud to achieve these labels that provide third-party validation of the MegaFlex DPA's eco credentials as well as confirmation that the UPS also complies with the circularity standards we have set ourselves. Meeting the increasing power demands of modern data storage solutions requires a continuous flow of clean, sustainable power and system-wide resiliency. The MegaFlex DPA UPS solution combines the highest efficiency ratings available with the smallest footprint, contributing to a lower carbon global data center industry.

In 2020 the solution was awarded the Solar Impulse Foundation's "Efficient Solution" label, an important recognition of ABB's work to reduce power losses. The label promotes solutions, assessed by independent experts, that combine technical innovation, profitability and environmental protection.



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01

Control and monitoring

ABB Ability™ SmartTracker oversees site performance, analyzes collected data, predicts equipment condition trajectories and recommends corrective actions to avoid problems. As well as implementing an effective maintenance strategy, ABB Ability™ SmartTracker also ensures equipment runs as efficiently as possible, saving energy and reducing greenhouse emissions.

An expert by your side
With SmartTracker, ABB can monitor your UPS equipment 24/7. You can relax as ABB promptly picks up any alarms or situations that might need attention. Nothing will be missed. It is like having an expert by your side, day and night. Platform notifies users with emails and text messages (SMS) if a critical condition affects the UPS operation. Comprehensive operating reports are sent every quarter to highlight systems performances. SmartTracker is a powerful Cloud-based monitoring platform that uses the ABB Ability™ Cloud solution, which already benefits many other ABB clients, such as the world's biggest banks, retailers and sport event organizers. ABB Ability™ SmartTracker's platform has been designed from the ground up with cyber security in mind. ABB's world-class cyber security protocols are applied.

Features and highlights
The solution is scalable and new assets can be added or reconfigured with a minimum of fuss. With ABB Ability™ SmartTracker the user can monitor voltages, currents, frequencies and other important device life signs. Monitored parameters include:

- Battery temperature
- Earth leakage current
- Fan speed variation
- Capacitor and fan health index
- Condensing humidity
- Output voltage behavior
- Output power changes
- Grid errors
- Voltage neutral to ground
- Load warning

Parameters are monitored and used by the predictive algorithms to provide a comprehensive overview of the health of the UPS and a prognosis of future performance and maintenance needs.

The ABB ANC Network Card
The only additional hardware needed to implement ABB Ability™ SmartTracker is ABB's proprietary, plug-and-play ABB ANC Network Card. The ABB ANC Network Card connects the user's power protection infrastructure to the ABB Cloud infrastructure, where ABB Ability™ SmartTracker resides and does its work. The ABB ANC Network Card's hardware and software meet the most stringent ABB cyber security requirements and are designed to guarantee the highest robustness against cyber-attacks.

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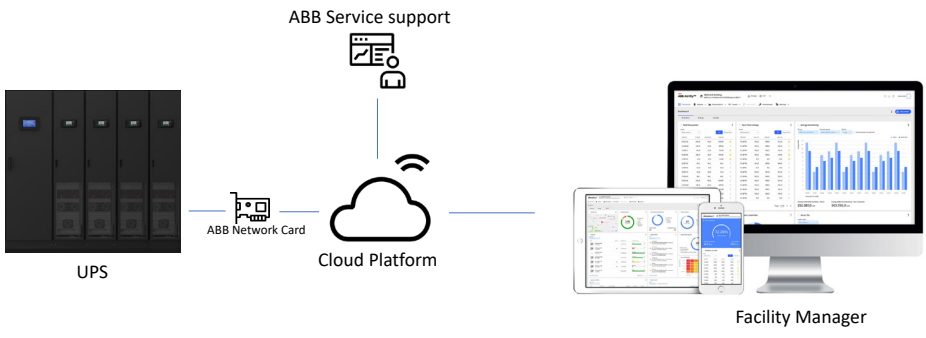
With an intuitive web app interface via smartphone, tablet or PC, ABB Ability™ SmartTracker makes it simple to oversee site performance and supervise the electric system



Tested and trusted

Comprehensive testing is crucial, which is why companies routinely test individual products before they leave the factory.

But as our customers know, there are often unexpected operating conditions once devices are integrated into a real-life system. To address this, ABB has developed a power protection testing facility located at its Swiss factory. This groundbreaking center has been carefully designed to test even the largest UPS configurations as a single entity.

All ABB's customers have access to the facility for:

- Modular infrastructure for flexible testing of up to 4 MW
- UPS testing with associated equipment – like switchgear, static transfer switches, and transformers – for smooth system integration into onsite infrastructure
- Overseeing the entire test process from the comfort of an adjoining conference room
- Remote video conferencing where in-person visits are not possible

Services

With a global presence in over 100 countries, ABB's service engineers are committed to supporting you wherever you are in the world.

Our UPS service portfolio is designed to maximize your return on investment, keeping equipment operating at its highest efficiency and availability throughout its lifetime.

We work closely with our team of R&D experts to develop the most advanced service technologies that ensure proactive product life-cycle management.

Our services include:

- Installation and commissioning
- Repairs
- Spares and consumables
- Extensions, upgrades and retrofits
- Replacement
- Training
- Service agreements
- Advanced services including predictive maintenance
- Factory evaluations

Technical specifications

MegaFlex DPA IEC			
GENERAL DATA			
System power rating [kW]	1000	1250	1500
Model power rating [kW]	250		
Static byass architecture	Distributed architecture		
Parallel system capability	Up to 6000 kW UPS system (6 x 1000 kW frames or 4 x 1500 kW frames)		
Topology	Online double conversion VFI-SS-111		
Cable entry	Bottom; Top; Mixed (Top + Bottom); Top busbar ready		
Serviceability	Frontal access for power frame and connection frame, removable power module with 360° access		
Back-feed protection	Built-in as standard		
INPUT			
Nominal input voltage	380 / 400 / 415 VAC		
Voltage tolerance (referred to 3x 400 / 230 V)	+15% all Loads / - 30% at partial loads		
Current distortion THDi	<3%		
Frequency range	40 – 70 Hz		
Power factor	0.99		
OUTPUT			
Rated output voltage	380 / 400 / 415 VAC		
Voltage tolerance (referred to 400 V)	± 1%		
Voltage distortion THDU	<2.0%		
Frequency	50 or 60 Hz (selectable)		
Rated power factor	1.0		
EFFICIENCY			
Max system efficiency (VFI) @	up to 97.4%		
Overall system efficiency (VFI)	Over 97% with varying of load		
In eco-mode (VFD)	Up to 99%		
ENVIRONMENT			
Protection rating	IP 20		
Storage temperature	-25 °C to +70 °C		
Operating temperature	0 °C to +40 °C		
Altitude (above sea level)	1000 m w/o derating		
COMMUNICATIONS			
User interface	System graphical touch screen		
Communication ports	USB, RS-485 Modbus / CANbus; RS-232, potential-free contacts, Input Analog/digital ports; ABB ANC network card (Modbus TCP/IP, Modbus RS485, SNMP V2 and V3, SMTP)		
Customer interface	Remote shutdown, gen-set interface, external bypass contact		
ADDITIONAL FUNCTIONALITIES			
Energy management / grid services	XtraVFI; PowerExchanger		
Compatibility	ABB Ability™ SmartTracker		
BATTERIES			
Types	VRLA, Li-Ion, Nickel Zinc ready		
Charger	Decentralized battery charger per power module		
STANDARDS			
Safety	IEC / EN 62040-1		
EMC	IEC / EN 62040-2		
Performance	IEC / EN 62040-3		
Environmental	(IEC 62040-4) & EcoPassport (LCA report & PEP certificate); ABB EcoSolutions label; SEAI- Triple E Product Registered & ACA Approval		
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001		
Seismic certification	ASCE 7-2016 & 2018 IBC Site Class D (ICC-ES AC156); EN 60068-3-3; IEEE 693-2018		
WEIGHT, DIMENSIONS			
Weight [kg] with all power modules	1940	2595	3250
Dimensions w × h × d (mm)	2235 x 2000 x 1000	3045 x 2000 x 1000	3045 x 2000 x 1000

MegaFlex DPA CSB IEC			
GENERAL DATA			
System power rating [kW]	1500	1750	2000
Model power rating [kW]	250		
Static byass architecture	Centralized fault tolerance pluggable static Bypass		
Parallel system capability	Up to 4500 kW UPS system (3 x 1500 kW frames) or up to 4000 kW UPS system (2 x 2000 kW frames)		
Topology	Online double conversion VFI-SS-111		
Cable entry	Bottom; Top; Mixed (Top + Bottom); Top busbar ready		
Serviceability	Frontal access for power frame and connection frame, removable power module with 360° access		
Back-feed protection	Built-in as standard on Central Static Bypass Module		
INPUT			
Nominal input voltage	380 / 400 / 415 VAC		
Voltage tolerance (referred to 3x 400 / 230 V)	+15% all Loads / - 30% at partial loads		
Current distortion THDi	<3%		
Frequency range	40 – 70 Hz		
Power factor	0.99		
OUTPUT			
Rated output voltage	380 / 400 / 415 VAC		
Voltage tolerance (referred to 400 V)	± 1%		
Voltage distortion THDU	<2.0%		
Frequency	50 or 60 Hz (selectable)		
Rated power factor	1.0		
EFFICIENCY			
Max system efficiency (VFI)	up to 97.4%		
Overall system efficiency (VFI)	Over 97% with varying of load		
In eco-mode (VFD)	Up to 99%		
ENVIRONMENT			
Protection rating	IP 20		
Storage temperature	-25 °C to +70 °C		
Operating temperature	0 °C to +40 °C		
Altitude (above sea level)	1000 m w/o derating		
COMMUNICATIONS			
User interface	System graphical touch screen		
Communication ports	USB, RS-485 Modbus / CANbus; RS-232, potential-free contacts, Input Analog/digital ports; ABB ANC network card (Modbus TCP/IP, Modbus RS485, SNMP V2 and V3, SMTP)		
Customer interface	Remote shutdown, gen-set interface, external bypass contact		
ADDITIONAL FUNCTIONALITIES			
Energy management / grid services	XtraVFI; PowerExchanger		
Compatibility	ABB Ability™ SmartTracker		
BATTERIES			
Types	VRLA, Li-Ion, Nickel Zinc ready		
Charger	Decentralized battery charger per power module		
STANDARDS			
Safety	IEC / EN 62040-1		
EMC	IEC / EN 62040-2		
Performance	IEC / EN 62040-3		
Enviromental	(IEC 62040-4) & EcoPassport (LCA report & PEP certificate); EcoSolutions label		
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001		
Seismic certification	ASCE 7-2016 & 2018 IBC Site Class D (ICC-ES AC156); EN 60068-3-3; IEEE 693-2018		
WEIGHT, DIMENSIONS			
Weight [kg] with all power modules	3576	3950	4600
Dimensions w × h × d (mm)	3645 x 2000 x 1000	4830 x 2000 x 1000	4830 x 2000 x 1000

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