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ABB

MODULAR THREE-PHASE UPS SYSTEM

PowerLine DPA 20–120 kVA

Full power for industrial applications

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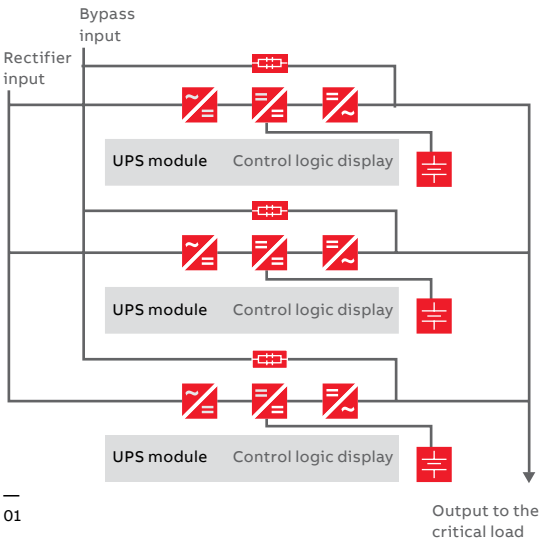
Smooth power in rough places

01 Each UPS module has all the hardware and software it needs for autonomous operation; there are no shared critical elements.

For many industries, the consequences of electrical power loss can be disastrous: Production lines may have to go through a complex and costly restart; expensive product may be ruined; valuable production time can be lost; process equipment can be damaged; and safety issues may arise. Because a reliable supply of clean power usually cannot be guaranteed by the grid, ABB's PowerLine DPA UPS (uninterruptible power supplies) makes sure that the operation of industrial applications keeps running continuously as it should.

PowerLine DPA is an online double conversion UPS and makes the advantages of ABB's unique modular UPS architecture available for locations that are usually rough on electronic equipment. PowerLine DPA is based on ABB's Decentralized Parallel Architecture (DPA) that ensures the very best UPS design in terms of availability, flexibility, cost and ease of use.

Its robust design is suitable for industrial plant environments that have a variety of temperatures, dust, moisture and corrosive contaminants. The PowerLine DPA is designed to have a design life of 15 years.



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DPA – the very best UPS design
With DPA, the UPS is modularized and each module has all the hardware and software needed for autonomous operation: rectifier, inverter, battery converter, static bypass switch, backfeed protection, control logic, display, and mimic diagram for monitoring and control. A module's output is not affected by failures elsewhere in the UPS. If one module is lost, the others take up its load. In other words, a multimodule system is fault tolerant and there are no single points of failure.

High serviceability
One major advantage of DPA is that the modules can be swapped online, ie, removed or inserted without the need to power down or transfer to raw mains supply and without risk to the critical load. This unique aspect of modularity directly addresses continuous uptime requirements, significantly reduces MTTR (mean time to repair), reduces inventory levels of specialist spare parts and simplifies system upgrades. Modularity pays off too when it comes to serviceability: local service personnel do not need special skills, visiting service engineers spend less time on site, and any risks of data or production loss are minimized.

The robust UPS
Survivability is crucial, so particular attention has been paid to physical robustness. PowerLine DPA's IP31-rated protection can easily cope with dust, water condensation, excessive humidity (up to 95 percent), corrosive air contamination and rough manhandling. The UPS is designed to operate in a temperature range of −5 to +45 °C. High priority has been given to safety and PowerLine DPA features a high degree of protection for users and maintenance staff. The device's compliance with the relevant standards – IEC/EN 62040-1 for general and safety aspects, IEC/EN 62040-2 for EMC and IEC/EN 62040-3 for performance and test – has been verified.

All sort of transformers are available to meet customer voltage requirements and electrical isolation. In addition, PowerLine DPA has a high overload capacity and robust short-circuit capability, and is available with rated powers of 20 to 120 kVA. With input and output (three-phase) voltages in the range 220 to 415 VAC the UPS requires no onerous electrical installation considerations and is straightforward to service.

An anti-condensation heater, lifting eyelets, dust filters, IP42 protection, halogen-free cables and cold start capability are some of PowerLine DPA's other features that are designed specifically for deployment in demanding industrial situations.

The Powerline DPA is engineered to comply with projectspecific requirements. Its pre-configured options, tailored for industry, allow agile implementations with short lead times. The solution delivered is well documented for both the operational and the maintenance crew.

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Tough meets rough

— 01 Rail control & signaling system
— 02 Paging & Information system
— 03 Control & Automation system
— 04 Lighting system
— 05 Instrumentation/ sensor and valves
— 06 Telcom system
— 07 Security systems
— 08 Industrial Infrastructure

A UPS for rough conditions
The guarantee of a continuous supply of clean power for their critical operations has become an essential prerequisite for the success of many enterprises. The PowerLine DPA UPS, designed to withstand the rigors of rough industrial environments, can provide this guarantee. PowerLine DPA's modular architecture makes it simple to service and because its online swapping attributes mean it never has to be switched off (it is designed to run up to 15 years continuously), first-class availability is achieved.

Applications
The PowerLine DPA UPS is ideal for ensuring a constant supply of good-quality power to industrial automation systems such as SCADAs, DCSs, etc. as well as the broad range of ancillary systems commonly found in the manufacturing and process industries such as those for sensors, valves, meters, data concentrators, emergency lighting, fire and gas monitors, telecoms and security. Other low-power and medium-power (up to 120 kVA) applications are also supported, such as motors, pumps, etc. For industrial applications with heavier power demands, ABB's PCS100 product line has a selection of suitable solutions.

In the area of transportation, the Powerline DPA UPS is perfect for supporting critical infrastructure such as rail control and signaling systems, paging and information distribution systems as well as the emergency lighting systems that are often mandatory in the transport network.

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Remote monitoring
In a power fail situation, it is important for all relevant personnel to be quickly and fully informed of the system status. For this reason, the PowerLine DPA UPS can be supplied with relay boards and a network management card that provide connection to a DCS (distributed control system) or SCADA (supervisory control and data acquisition) system via SNMP, Modbus TCP or Modbus RS 485.

These interfaces allow:
- Environmental monitoring
- Extensive alarm handling and dispatching
- Redundant UPS monitoring
- Integration of PowerLine DPA into multivendor and multiplatform environments
- The supply of UPS data to Web applications

Connectivity via interfaces such as Modbus and SNMP allows the UPS to be part of a network that enables industrial production systems to exchange information and interact. The remote monitoring services makes UPS data available throughout the entire value chain and supply chain in real time. A presence on the network enhances the overall capabilities of data acquisition, operations, maintenance and advanced service.

Local control and metering are provided via a HMI (human-machine interface) consisting of graphical display showing the UPS mimic diagram, UPS operating status (normal, battery and bypass), and programmable alarms.

Battery bank
Most industrial processes will draw substantial amounts of power from a UPS. Therefore, PowerLine DPA is able to work with valve-regulated lead-acid (VLRA) or NiCad batteries to support autonomy times up to 10 h. Fast recharging is also catered for to get the UPS battery bank back up to operational levels as quickly as possible.

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PowerLine DPA
Technical specification

General data			
System power range	20–120 kW		
Nominal power / frame	20 kW 40 kW	80 kW	120 kW
Number of UPS modules	1	2	3
Output power factor	1.0		
Topology	Online double conversion		
UPS configuration	Single, parallel-redundant, dual		
UPS type	Modular (Decentralized Parallel Architecture)		
Input			
Nominal input voltage	3 × 380/220 V + N, 3 × 400/230 V + N, 3 × 415/240 V + N (others on request)		
Voltage tolerance (referred to 3 × 400 / 230 V)	For loads <100% (–15%, +10%), <80% (–20%, +10%), <60% (–30%, +10%)		
Input distortion THDi	≤4%		
Frequency	50 or 60 (selectable)		
Power factor	0.99		
Output			
Rated output voltage	3 × 380/220 V, 3 × 400/230 V, 3 × 415/240 V (others on request)		
Voltage distortion (referred to 3 × 400/230 V)	<2.5%		
Frequency	50 Hz or 60 Hz		
Overload capability	150% 1 min, 125% 10 min		
Output short capability	2.7 × Inom		
Unbalanced load	100% (all three phases regulated independently)		
Crest factor	3:1 (load supported)		
Efficiency			
Overall efficiency / transformerless	Up to 96%		
In eco-mode configuration	98%		
Environment			
Storage temperature	–25 °C to +70 °C		
Operating temperature	–5 °C to +45 °C		
Humidity	5% to 95% without condensation		
Altitude configuration	1000 m without derating		
Communications			
HMI	Graphical display for control and metering, 8 programmable alarm indications		
Relay contactors	8 in /9 out programmable relays		
LCD	On system level HMI with graphical display and alarm indications; on module level service control interface		
LEDs	LED for notification and alarm		
Communication ports	USB, RS-232, SNMP slot, potential-free contacts		
Electrical / Mechanical			
Degree of protection	IP31, IP42 (optional)		
Color	RAL 7035		
Cable entry	Bottom, Top (optional)		
Wiring	Halogen free cable		
Operating and maintenance access	Front access		
Ventilation	Forced ventilation with monitored fans		
Battery			
Battery type	VLRA / NiCd		
Autonomy	According to customer's requirement		
Standards			
Safety	IEC / EN 62040-1		
Electromagnetic compatibility (EMC)	IEC / EN 62040-2		
Performance	IEC / EN 62040-3		
Product certification	CE		
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001		
Weight, dimensions			
Weight (with modules / without transformers)	Up to 550 kg	Up to 650 kg	Up to 850 kg
Dimensions w × h × d (mm)	800 × 2200 × 800 mm	1200 × 2200 × 800 mm	1600 × 2200 × 800 mm

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PowerLine DPA

Product features

Available models

Cabinet type	PowerLine DPA 20–40	PowerLine DPA 80	PowerLine DPA 120
Number of modules	1	2	3
Dimension w × h × d	800 × 2200 × 800 mm	1200 × 2200 × 800 mm	1600 × 2200 × 800 mm
Weight in kg (without transformers)	Up to 550 kg	Up to 650 kg	Up to 850 kg

UPS cabinet configuration

- 3ph online double conversion UPS
- Decentralized Parallel Architecture
- Housed in an industrial metal enclosure, IP31, RAL 7035, bottom cable entry
- Halogen free cable
- Forced ventilation with monitored fans
- Input, bypass and battery protection
- Manual bypass switch
- Integrated back-feed protection
- HMI interface with graphical display, control push keys, UPS operating status indication and programmable alarm section
- Communication interfaces: Relay board with 9 programmable outputs and 8 inputs, RS-232 and USB ports

Options

- Input, output, bypass aluminum transformer
- Customized input & output voltages
- Ingress protection IP42
- Top cable entry
- Ventilation frame fans
- Tropicalization and anti-corrosion protection for electrical boards
- Anti-condensator heater
- Lifting eyes
- Control and monitoring (ModBus RS-485, ModBus TCP/IP, SNMP)
- Battery temperature sensor
- Cold start
- Redundant configuration

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