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YOUR AUTOMATION IMPROVEMENT

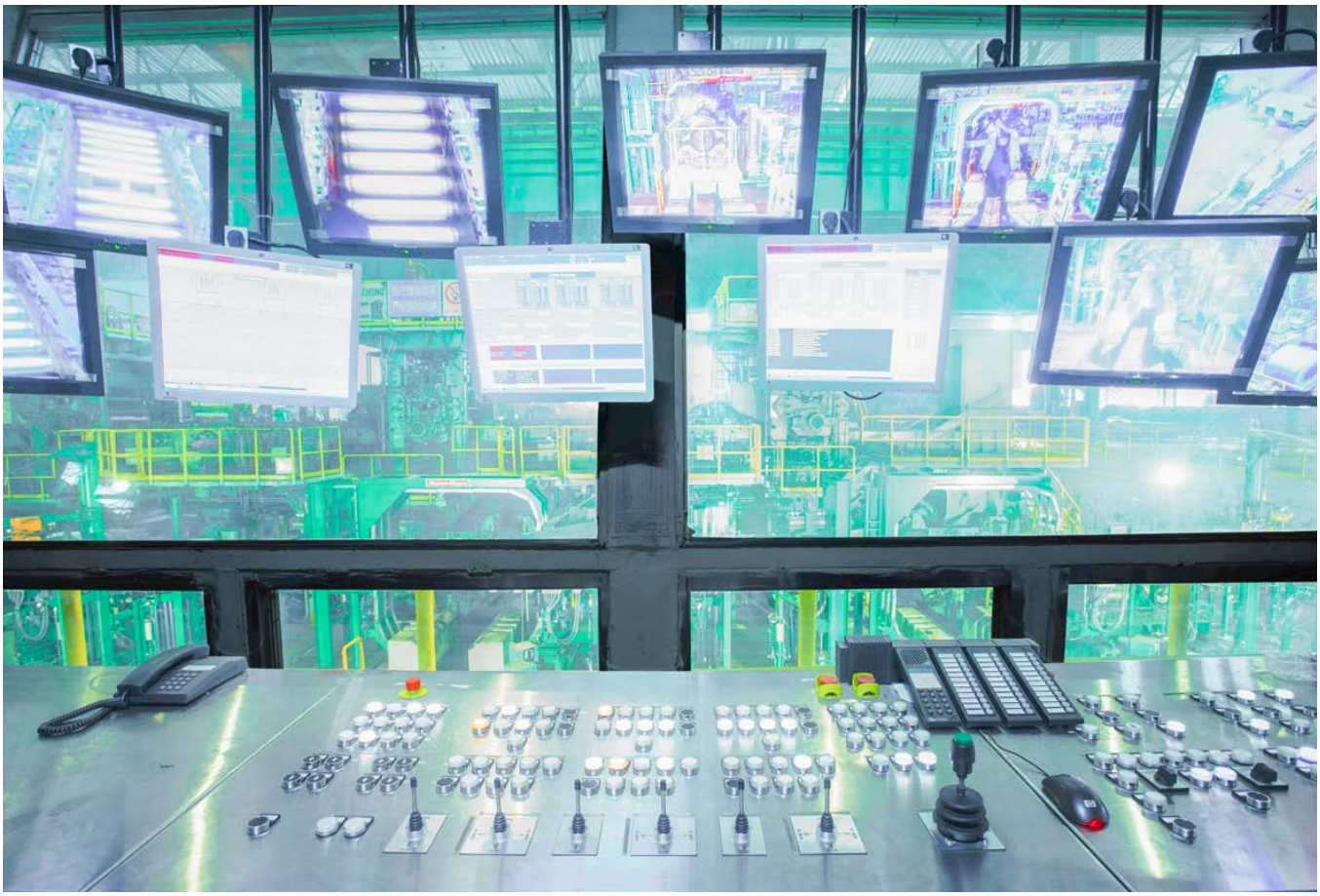
Strada per Vicolungo, 4– 28060 Recetto (NO) – Italy

ABB

MODULAR THREE-PHASE AND SINGLE-PHASE UPS SYSTEM

PowerLine DPA 20–120 kVA

Full power for industrial applications



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Smooth power in rough places

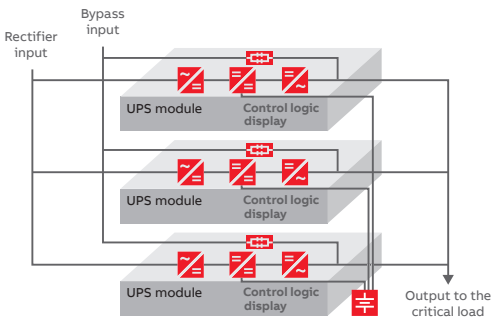
— 01 In DPA, each UPS module has all the hardware and software it needs for autonomous operation.

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.

Modular UPS with DPA (Decentralized Parallel Architecture)



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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.

The PowerLine DPA is also certified according to the European standard EN 50121 ("Railway applications. Electromagnetic compatibility") and International standard IEC 62236 for fixed power supply installations and apparatus. The modular UPS designed for use in industrial applications has passed stringent electromagnetic test ensuring minimal disturbance to other equipment surrounding the railway environment.

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 (three-phase output) and 20 to 80 kVA (single-phase output). With input power factor close to 1, 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 project specific 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.

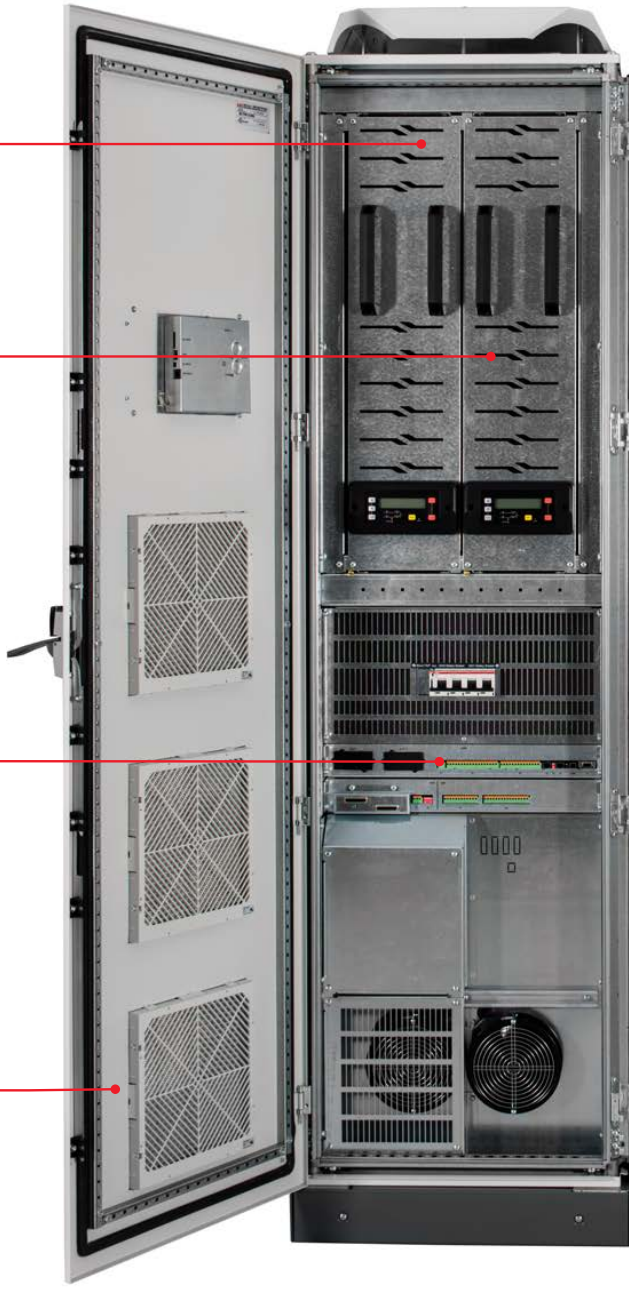
PowerLine DPA
Product features

At the heart: the module
- Featuring ABB's exclusive DPA
- IGBT rectifier and inverter
- Online swap capability, MTTR <30 min
- Service panel for maintenance and operation of each individual module
- Monitored fans
- Redundant fans (optional)
- Tropicalization and anti-corrosion (optional)

Superior electrical performance*
- Efficiency up to 96% (3ph); up to 94% (1ph)
- Input power factor 0.99
- Input THDi <4%
- 2.7 x Inom (3ph); 2.4 x Inom (1ph)
- Output THDv <2%
- 100% unbalanced load capability
- All phases regulated independently

Wide suite of interfaces & communication
- Graphical display with programmable LEDs for alarm and monitoring
- Full range of communication protocols available
- Potential-free contacts: 8 in / 9 out, programmable and adaptable to any customization need

ABB industrial frame
- IP31 protection (IP42 optional)
- Bottom cable entry (top entry optional)
- Halogen-free cabling
- Dust filter (optional)
- Lifting eyes (optional)
- Anti-condensation heater* (optional)
- Single feed* (optional)
- Tropicalization and anti-corrosion (optional)



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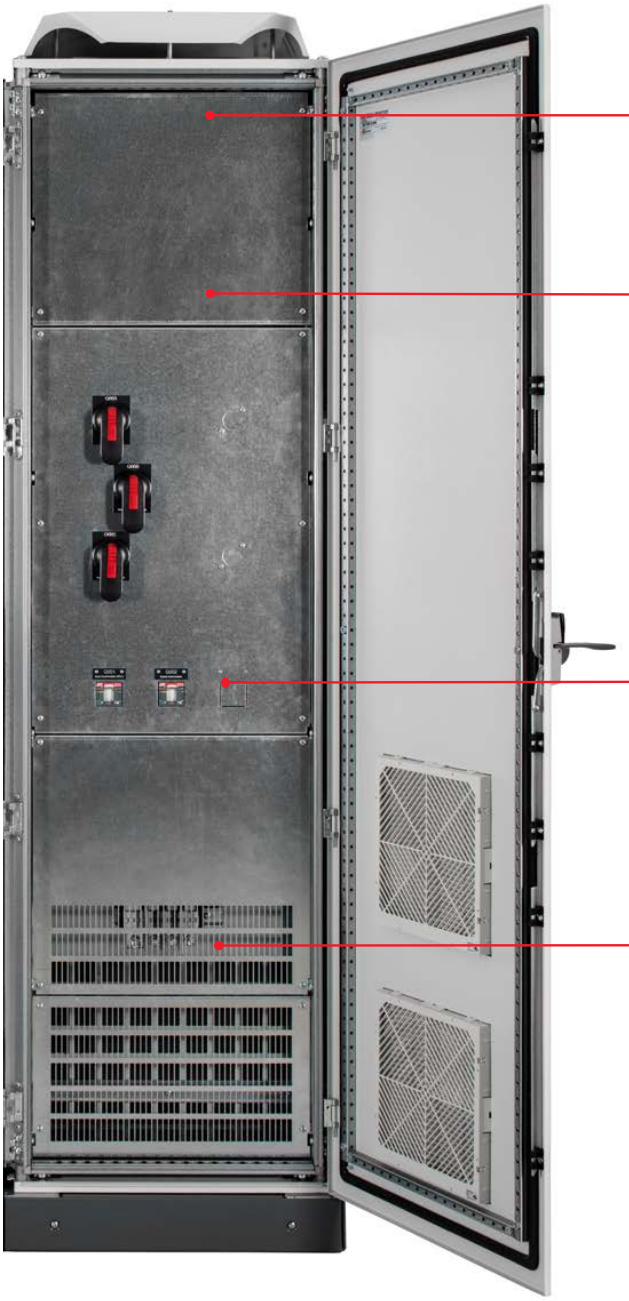

Power and redundancy for demanding industrial applications
- 3-ph: 20-120 kVA with N and N+N configurations
- 1-ph: 20-80 kVA with N and N+1 configurations
- Possibility to run frames in parallel (up to 30 modules max.)

Full range of electrical and functional options
- Cold/black start (optional)
- Synchronization kit (optional)
- Battery temperature sensor (optional)
- Battery-wrong polarity diode* (optional)

Total onboard protection
- Rectifier and bypass input breakers
- Rectifier input switch
- Output switch
- Integrated manual bypass switch

Optional transformers
- Providing galvanic separation and adaption to any grid voltage and type
- N+1 redundant frame ventilations fans
- Factory installed and tested

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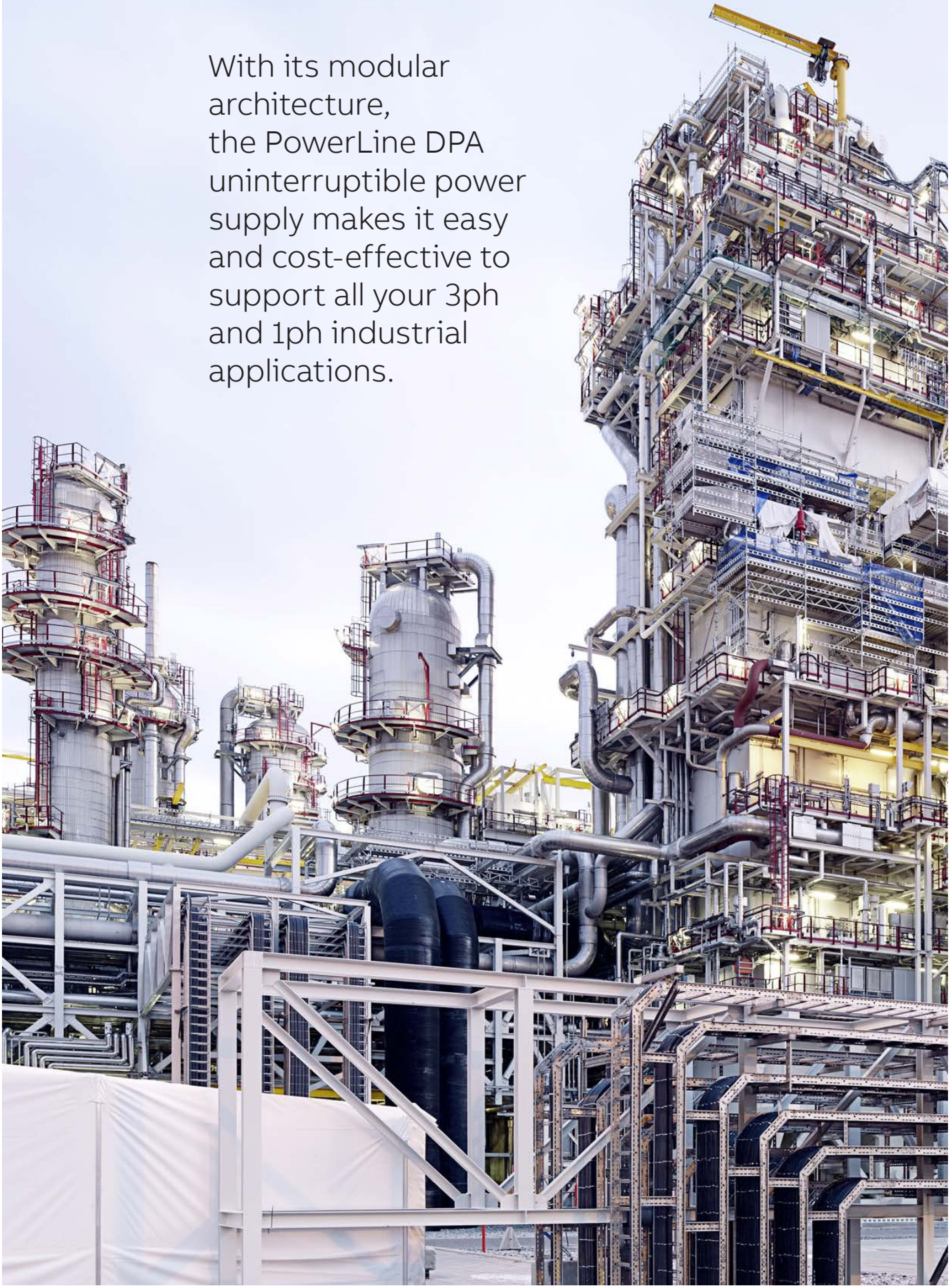
With its modular architecture, the PowerLine DPA uninterruptible power supply makes it easy and cost-effective to support all your 3ph and 1ph industrial applications.



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Tough meets rough

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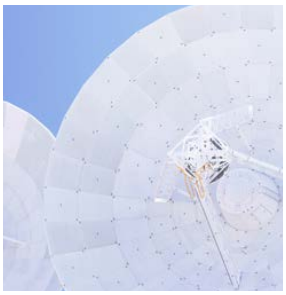
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Remote monitoring
In a power fail situation, it is important for all relevant personnel to be quickly and fully informed of the system status. For this reason, the PowerLine DPA UPS can be supplied with relay boards and a network management card that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

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 lead-acid, NiCad and lithium-ion 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.

PowerLine DPA
Technical specification

General data				
System power range	20 - 120 kVA (3ph); 20 - 80 kVA (1ph)			
Nominal power / frame	20 kVA	40 kVA	80 kVA	120 kVA
Number of UPS modules	1	1	2	3
Output power factor	1.0			
Topology	Online double conversion			
UPS configuration	Single, redundant, dual, N+1			
UPS type	Modular (Decentralized Parallel Architecture)			
Input				
Nominal input voltage	3 × 400/230 V + N (others on request)			
Voltage tolerance (referred to 3 × 400 / 230 V)	For loads <100% (−15%, +10%), <80% (−20%, +10%), <60% (−25%, +10%)			
Input distortion THDi	≤4%			
Frequency	50 or 60 Hz (selectable)			
Power factor	0.99			
Output				
Rated output voltage	3ph: 400 V, 1ph: 230 V			
Voltage distortion (referred to 3 × 400/230 V)	<2% linear load, <4% non linear load			
Frequency	50 Hz or 60 Hz (selectable)			
Overload capability	150% 1 min, 125% 10 min			
Output short capability	2.7 x Inom (3ph); 2.4 x Inom (1ph)			
Unbalanced load	100% (all three phases regulated independently)			
Crest factor	3:1 (load supported)			
Efficiency				
Overall efficiency / transformerless	up to 96% (3ph); up to 94% (1ph)			
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 (others on request)			
Cable entry	Bottom, Top (optional)			
Wiring	Halogen free cable			
Operating and maintenance access	Front access			
Ventilation	Forced ventilation with monitored fans			
Battery				
Battery type	Lead acid / NiCd / Li-Ion			
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 300 kg	Up to 500 kg	Up to 850 kg	
Dimensions w × h × d (mm)	800 × 2200 × 800 mm	1200 × 2200 × 800 mm	1600 × 2200 × 800 mm	

Available models (three-phase and single-phase)

Cabinet type	PowerLine DPA 20–40 (3ph, 1 ph)	PowerLine DPA 80 (3ph, 1ph)	PowerLine DPA 120 (3ph)
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 300 kg	Up to 500 kg	Up to 850 kg

Available models (1ph / N+1 configuration)

Cabinet type	PowerLine DPA 20 N+1	PowerLine DPA 40 N+1	PowerLine DPA 80 N+1
Number of modules	2	2	3
Dimension w × h × d	1000x2200x800 mm	1000x2200x800 mm	1400x2200x800 mm
Weight in kg (without transformers)	470 kg	500 kg	670 kg

UPS standard configuration

- 3ph or 1ph 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

- Redundant configuration
- Input, output, bypass aluminum transformer
- Cold start
- Customized input & output voltages
- IP 42 degree of protection
- Top cable entry
- Redundant module fans
- Tropicalization and anti-corrosion protection for electrical boards
- Dust filter
- Synchronization kit
- Anti-condensation heater*
- Lifting eyes
- Control and monitoring (ModBus RS-485, Profibus, ModBus TCP/IP, SNMP)
- Battery temperature sensor
- Battery wrong polarity protection*
- Other colors
- Single feed kit*

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