

# ABB's uninterruptible power supplies: Light industrial UPS versus commercial UPS

ABB offers UPSs with different architectures, different features and a wide range of power capabilities. However, up until now, these UPSs have had one thing in common: They were designed for relatively friendly environments where the heating, cooling, ventilation and humidity are permanently controlled, and where there is no risk of biological attacks and very low levels of chemical contamination. Examples of such settings are control rooms or data centers in banks, hospitals, educational establishments, telecommunications hubs, server rooms.

Of course, a large number of industrial settings are not so obliging when it comes to providing a friendly environment. Dust, moisture, vibration, excessive heat, corrosive air contamination, lack of space and manhandling are just some of the challenges that a UPS would have to face in industrial process plants, factories, electrical substations, oil and gas installations etc.

For this reason, in 2016 ABB introduced a new modular UPS for use in these light industrial applications: ABB's PowerLine DPA UPS.

PowerLine DPA's IP31-rated protection can easily cope with dust, water condensation, humidity (up to 95 percent), excessive heat, corrosive or biological air contamination and rough manhandling. ABB's PowerLine DPA can provide power in the range of 20 kVA to 120 kVA and is designed to operate in a temperature range of -5 to +45 C without power derating.

When environmental conditions are not clean, the risk can increase, so the top priority has been given to the safety aspects and the UPS features a high degree of protection for users and maintenance staff. The ABB PowerLine DPA UPS has a robust mechanical design suitable for rough environments (water protection up to IP42, anti-corrosion treatment, anti-condensation heater, dust filter, etc) as well as an electrical design that protects against short circuiting and overloading. It provides galvanic isolation up and downstream, employs halogen-free cables so no toxic gases are emitted in case of fire, and has a cold start capability in case of power blackout.

Lack of space is a problem that is frequently encountered in industrial environments, so the PowerLine DPA UPS has not only a small footprint but, unlike other ABB's UPSs, it also has a cable entry at the front (top and bottom), which eliminates the necessity for rear access and the associated extra space this entails. Ventilation flows from the front to the top, which means the UPS can be placed right up against a wall and lifting eyes support easy transportation and installation.

To ensure compatibility with the networking and distributed intelligence that is becoming prevalent in light industrial installations, the PowerLine UPS - like other ABB's UPSs - can be supplied with relay boards and a network management card to allow environmental monitoring, extensive alarm handling and dispatching, redundant UPS monitoring, integration into multivendor and multiplatform environments and the supply of UPS data to Web applications.

The PowerLine UPS is similar to some other ABB's UPSs in another way too. It is built on ABB's unique and proven decentralized parallel architecture (DPA). The modular nature of DPA delivers not only the best availability but also the best serviceability and flexibility. Modules can be replaced without switching to bypass the whole system or powering off, so routine maintenance is simple.

ABB commercial UPS	ABB's "Light" industrial UPS
Applications: Data center in banks, hospitals, offices, airports, central train stations	Applications: Digital automation and control systems, instrumentation, communication and electronic devices in manufacturing, transportation and utilities.
The interruption of AC power may disrupt data processing and telecommunications but does not create an inherent risk of injury to people and property.	The interruption of the AC power may result in the loss of finished products or hundreds of person-hours resetting the production equipment.
Aimed at: business continuity and data protection.	Aimed at: 24/7 operation, personnel and operational safety.
Key attributes for control room and data center infrastructure are energy efficiency, power expansion capability, optimized footprint, optimized cooling system, standardized power blocks and N+1 redundancy, remote control & monitoring.	Key attributes for manufacturing plants and industrial control rooms are continuous operation, parallel redundant operation, galvanic isolation, system degree of protection, short-circuit and overload capability, safety, fire protection, integration into the electrical control system.
Manufacturing process order: Configure to Order.	Manufacturing process order: Engineer to Order.

### Essential difference between commercial and light industrial UPS

ABB's commercial UPS	ABB's PowerLine DPA
	

### Environmental characteristics

Control room is clean and the temperature and humidity are controlled by HVAC	Neither the temperature nor the humidity is controlled
Operating temperature range: up to 40°C	Operating temperature range: up to 45°C (without power derating)
Humidity: 0 percent to 95 percent without water condensation	Humidity: 0 percent to 95 percent with water condensation
Non air contaminants	Air contaminants: often dusty and corrosive

### Mechanical UPS characteristics

Ingress protection: Up to IP21	Ingress protection: up to IP42
Low-toxicity and low-smoke cable (optional)	Low-toxicity and low-smoke cable
Ventilation: forced with monitored fans from front to the back	Ventilation: forced with monitored and redundant fans (N+1) from front to the top
Operating and maintenance access: front access	Operating and maintenance access: front access

## Essential difference between commercial and light industrial UPS

## ABB's commercial UPS

## ABB's PowerLine DPA

## Electrical characteristics

System power range: 10 kW – 5 MW	System power range: 20 kVA – 120 kVA
System configuration: - single - parallel (N+1)	System configuration: - single - parallel (N+1) - parallel-redundant (two identical fully segregated 100% rated UPS units)
Power factor = 1	Power factor > 0.9
Efficiency > 96 percent	Efficiency > 90 percent
Non input galvanic isolation	Input and output galvanic isolation (optional)
UPS topology: transformer-less	Input/bypass/output transformer usually specified for galvanic isolation or step up/down transformer
Non overload and short-circuit UPS input protection	Overload and short-circuit UPS input protection
Manual bypass switch	Manual bypass switch

## UPS battery

Autonomy: 5-60 min	Autonomy: Up to 8 hours
Battery type: VLRA & Ni-cd	Battery type: VLRA & Ni-cd
Internal batteries (optional)	External batteries
Overload and short-circuit battery protection	Overload and short-circuit battery protection

## Control and monitoring

Central graphical control panel with touch screen display (optional)	Central control panel with graphical display, control keys and programmable alarms and indications
Fixed input & output relay	Programmable input & output relay
Network communication interfaces (SNMP, Modbus) allowing integration to the building management systems (optional)	Network communication interfaces (SNMP, Modbus) allowing integration to the electrical digital system or SCADA systems

## Product performance

UPS design life: up to 10 years	UPS design life: up to 15 years
International standard: IEC-62040-1 Safety IEC-62040-2 Electromagnetic Compatibility (EMC) IEC-62040-3 Performance IEC-62040-4 Environmental aspects	International standard: IEC-62040-1 Safety IEC-62040-2 Electromagnetic Compatibility (EMC) IEC-62040-3 Performance IEC-62040-4 Environmental aspects
In compliance with EN 50171 Central Power supply system (optional)	

## UPS documentation

General technical data sheet, general arrangement, operating and maintenance manual	On project basis technical data sheet, general arrangement, electrical wiring and operating & maintenance manual
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