Industrial Power Solutions

B9000FXS

60 to 300 kVA
Three-phase UPS

Performance and reliability for any kind of critical applications

FleXible and Smart

EFFICIENCY CERTIFIED TÜV NORD

DOUBLE CONVERSION DOUBLE PROTECTION

UNITY POWER FACTOR

TOTAL HARMONIC DISTORTION <3% POWER SAVE TECHNOLOGY

BORRI ECO UPS

Industrial Power Solutions

B9000FXS combines management of THD and power factor, low cost of ownership and power protection in a highly reliable solution guaranteed by the most advanced technology.

INFORMATION AND COMMUNICATION TECHNOLOGY
• Data centers
• Server farms
• Communication rooms
• Broadcast
• Networking
CRITICAL ELECTRICAL ENGINEERING
• Industrial controls
• Manufacturing machinery
• Process equipment
• Transportation
• Building automation

LOW THDi and POWER FACTOR PERFORMANCE ENHANCE COMPATIBILITY with INPUT MAINS and GENERATORS

The BORRI B9000*FXS* model UPS uses a completely new IGBT input rectifier design, encompassing an advanced PFC (Power Factor Control) which is capable of keeping input current THDi (Total Harmonic Distortion) at a level of less than 3% and the input power factor within 1% of unity, even when only small loads are applied.

The key benefits are that the UPS is therefore *compatible* with the upstream source, the mains or any kind of generator and the transfer of power between source and load is more efficient. This results in a *saving* in terms of scale of sources, cables and protective devices.

HIGH EFFICIENCY REDUCES OVERALL COST of OWNERSHIP

The B9000*FXS* has a new SOL (Smart On-Line) function which enables a total operating efficiency of between 95% and 98%. This mode referred to as '**Intelligent ECO mode**' significantly *reduces the utility costs* associated with operating a device of this type. Moreover, this increase in efficiency results in the production of less waste heat, minimising *cooling/air-conditioning costs*. This represents a double saving to the energy conscious user.

The SOL function uses continual monitoring techniques to review the input characteristics of the supply. This means that if the supply line drops or fluctuates outside of acceptable conditions the UPS uses the internal inverter to support the load. This is achieved through a fast, fully static transition from VFD to VFI mode.

DOUBLE CONVERSION TOPOLOGY OFFERS "GREEN" DOUBLE PROTECTION for EVERY APPLICATION

The *VFI Online double conversion* topology implemented in this equipment offers *built in inverter galvanic* protection completely isolating the output power from all the input power anomalies, delivering fully conditioned pure sine-wave output.

In this pure on-line mode the unit delivers a excellent **certified 96% efficiency**.

Because of the technology and topology used, no additional losses are generated to get low input harmonics *or input/output galvanic isolation*.

The B9000*FXS* unit is designed to provide excellent output voltages suited to very demanding applications with either 100% step load, unbalanced, non-linear or modern IT loads.

It also provides exceptional performance: with a power factor of up to 0.9 (lagging or leading), there is no requirement to de-rate the unit.

TRIPLE INTELLIGENCE: FleXible and Smart

If the application requires extremely flexible and reliable UPS protection, the B9000*FXS* is ideal. It delivers advanced features based on state-of-the- art total digital control. This control incorporates dual DSP (Digital Signal Processing) and µC (Micro controller) technologies.

The system design ensures that auxiliary power supplies and processors are no longer single points of failure which could compromise the availability of clean power to the load.

The B9000*FXS* is designed to overcome the limitations imposed by other, older, designs. With its distributed control architecture, the B9000*FXS* will always have a UPS circuit protecting the load; furthermore, the status of most critical components is constantly monitored, allowing predictive maintenance and avoiding unexpected breakdowns.

B9000*FXS* working state can be easily monitored by any Building Management System and via LAN/WAN.

ACCURATE BATTERY MANAGEMENT

Batteries are electro-chemical devices, which store charge chemically; as such their performance degrades with time. The B9000*FXS* performs ABM (*Accurate Battery Management)* according to battery manufacturer requirements.

Following a UI characteristic curve, the charger charges at a *constant current* appropriate for the battery type used, preventing detrimental excess charging. In addition to the float voltage level, *boost charge* can be set, optimising the recharge time when there is the possibility of consecutive power outages within a short period.

ABM also reduces the residual *ripple current* (one of the causes of premature battery wear), as well as protecting the battery from damaging *deep discharges*.

Automatic battery *temperature compensation* charge voltage may be implemented, charging the battery more appropriately and increasing battery life.

By means of the *DCM (Dynamic Charging Mode)*-very long battery autonomies can be achieved without increasing total charge time. This is achieved through the implementation of an intelligent increase in maximum battery charge current when the maximum inverter power is not being drawn by the load.

An integrated periodical battery testing function *tests and monitors battery health*, providing advanced warning to guide the application of preventive maintenance.

PARALLEL SYSTEMS for REDUNDANCY or CAPACITY INCREASING with "HOT SWAP" MODULARITY

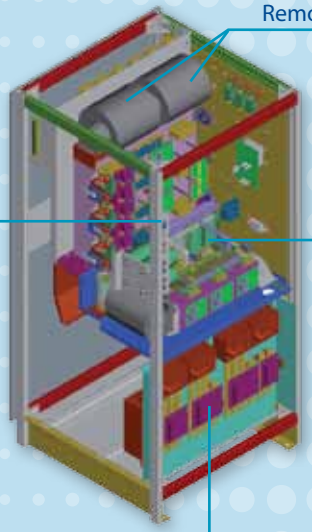
The B9000*FXS* UPS solution offers parallel options in both *redundancy* and *capacity* modes, providing the possibility for both extra system resilience and increased capacity.

The parallel control circuitry associated with these units is fully digital

and acts on both active and reactive power on each of the three output phases. This allows *accurate load current sharing* among the UPS units even during transient conditions.
Parallel control is distributed between all units and communication is achieved through the use of a CAN BUS connection loop. This has the effect of producing a *highly reliable* system with "no single points of failure".
Intelligent design of the system connections allow for *easy installation and easy future upgrades*, this allows for upgrading the field without difficulty.
In the **modular** arrangement, units can be added or removed "hot" without load disturbances or the need to switch to bypass.
Smart Parallel functions facilitate the automatic switching off of units where the total power requirements of the load is provided by fewer than the total number of UPS units attached. . This is commonly known as 'load based shutdown' and maximises the efficiency of the complete system by keeping the load on each module at an optimum level.
Two independent paralleled systems can be synchronized (*Sync Control*) in order to feed downstream STS' for seamless transfers.

EASY INSTALLATION, OPERATION and MAINTENANCE

The B9000*FXS* can be installed up close to walls or other cabinets as cooling air is expelled through vents on the top of the unit.
This new design gives the user a *significant saving in floor utilisation*. This makes the B9000*FXS* an ideal solution where space is at a premium.
Despite this modern compact design, all critical components are accessible from the front of the unit; this improves accessibility to allow regular maintenance and reducing Mean Time to Repair (MTTR).



USER INTERFACE and ACCESSORIES

User-friendly Interface

COMUNICATION
- RS232 serial port
- USB port
- Remore EPO
- External Manual Bypass status
- Battery Switch status
- Diesel Mode

OPTIONAL
- Web/SNMP
- ModBus
- Relays
- Modem
- Remote panel

Monitoring, managing and shutdown software

OPTIONS
- Parallel capacity/redundancy
- Sync control for dual feed systems
- Isolation transformer
- External bypass
- External battery cabinets
- Battery switch box
- Battery thermal probe
- Transformers/ autotransformers for voltage adaption
- Top cable entry

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60 to 300 kVA
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RATING	60KVA	80KVA	100 KVA	125 KVA	160 KVA	200 KVA	250 KVA	300 KVA
Capacity (kVA)	60	80	100	125	160	200	250	300
Dimensions WxHxD (mm)	815x825x1670					1200x860x1900		
Weight (kg)	570	600	625	660	715	970	1090	1170
Input/output connection	Hardwired (dual input)							
Battery	External, 300-312 cells							
INPUT								
Nominal voltage	220/380, 230/400, 240/415 Vac three phase							
Voltage range	-20%, +15% from nominal							
Frequency	50/60 Hz (45–65 Hz)							
Power factor	0,99							
Current distortion (THDi)	<3%							
OUTPUT								
Nominal voltage	220/380, 230/400, 240/415 Vac three phase							
Frequency	50/60 Hz							
Voltage regulation	±1% static; ± 5% dynamic 100% load change, <20 ms recovery time							
PF acceptable without de-rating	Lagging to leading 0,9							
Overload capacity	101–125% for 10 min (on-line), 126–150% for 1 min (on-line), 1000% for 1 cycle (bypass)							
Efficiency Pure on-line SOL (pure Eco) mode	 >95% *(certified TÜV NORD)* 96-98% (>98%)							
OPTIONS	Parallel capacity/redundancy, sync control, isolation transformer, external bypass, external battery cabinets, battery switch box, battery thermal probe, transformers/autotransformers for voltage adaption, top cable entry							
USER INTERFACE								
Front panel	Graphical LCD display, mimic with LED's and keyboard							
Standard communication ports	RS232 serial port, USB, Remote Emergency Power Off input, Battery Switch status monitoring, External Manual Bypass status monitoring, Diesel Mode							
Optional	Web/SNMP, ModBus, relay, modem cards; remote panel; monitoring, managing and shutdown software							
ENVIRONMENTAl								
Operating temperature	0°C – +40°C							
Storage temperature	-10°C – +70°C							
Altitude	<1000 m							
Audible noise at 1 meter (dBA)	<60							
STANDARDS AND CERTIFICATIONS								
Marking and Certifications	CE, GOST, ECA, ETL , TÜV							
Safety	IEC EN 62040 -1							
EMC	IEC EN 62040 -2							
Test and Performance	IEC EN 62040 -3							
Quality, Environment, Healt and Safety	ISO 9001: 2008, ISO 14001: 2004, BS OHSAS 18001:2007							

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