

*Flexible and Smart*



combination of low input current distortion, unity input power factor and high overall efficiency. These advances in design offer numerous benefits, including lower running costs and substantially increased reliability.

#### INFORMATION AND COMMUNICATION TECHNOLOGY

- Large data centers
- Server farms
- Telecommunication installations
- Broadcasting and entertainment
- Internet Service Providers (ISP)

#### CRITICAL ELECTRICAL ENGINEERING

- Industrial systems
- Financial and banking
- Security operations
- Transportation systems
- Medical/Healthcare



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



The B9600FXS 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 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 B9600FXS has a new SOL (Smart On-Line) function which enables a total operating efficiency of between 96% 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

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 B9600FXS 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 B9600FXS is ideal. It delivers advanced features based on state-of-the-art total digital control. This control incorporates dual DSP (Digital Signal Processing) and  $\mu$ C (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 B9600FXS is designed to overcome the limitations imposed by other, older, designs. With its distributed control architecture, the B9600FXS 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. B9600FXS 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 B9600FXS 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



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



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 B9600FXS can easily be moved within areas not wider than 1200mm, and 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 B9600FXS 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).

The B9600FXS also incorporates a unique back-feed power protection system, where in the event of the output of the UPS being fed back into the mains, the unit will immediately isolate itself. This in turn, removes the need for additional MCBs or other similar safety devices.

## USER INTERFACE and ACCESSORIES



User-friendly Interface

### COMMUNICATION

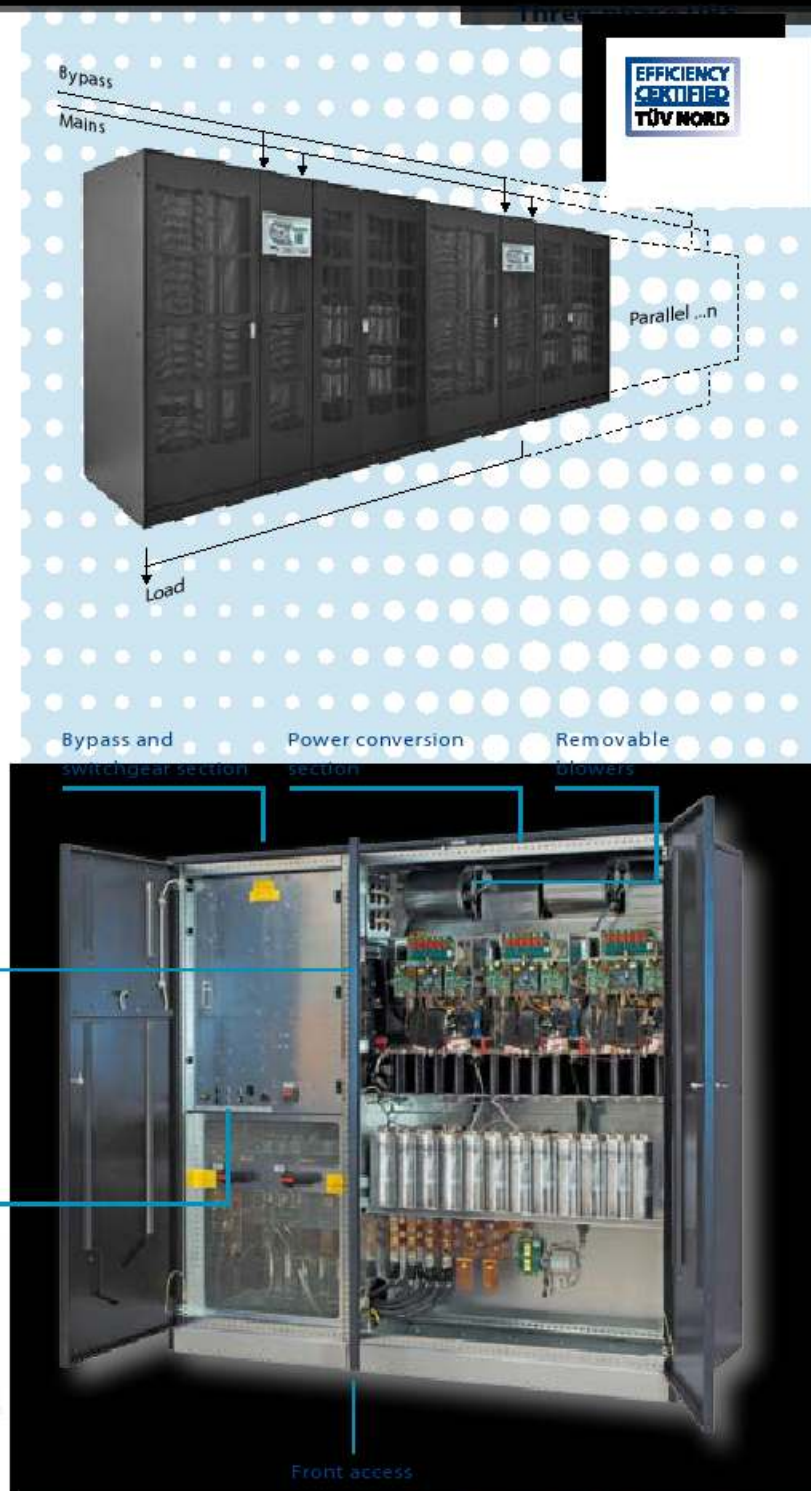
- RS232 serial port
- USB port
- Remote EPO
- External Manual Bypass status
- Battery Switch status
- Diesel Mode

### OPTIONAL

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



Monitoring, managing and shutdown software



RATING	400 kVA	500 kVA	600 kVA	800kVA
Capacity (kVA)	400	500	600	800
Dimensions WxHxD (mm)	1990x1920x990	2440x2020x990		3640x1920x990
Weight (kg)	1820	2220	2400	3600
Input/output connection	Hardwired (dual input)			
Battery	External, 300 - 312 cells			
<b>INPUT</b>				
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%			
<b>OUTPUT</b>				
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%)			
<b>OPTIONS</b>	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			
<b>USER INTERFACE</b>				
Front pannel	Graphical LCD display, mimic with LED's and keyboard			
Standard communication ports	RS232 serial, 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			
<b>ENVIRONMENTAL</b>				
Operating temperature	0°C ÷ +40°C			
Storage temperature	-10°C ÷ +70°C			
Altitude	<1000 m			
Audible noise at 1 meter (dBA)	<60			
<b>STANDARDS AND CERTIFICATIONS</b>				
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, Health and Safety	ISO 9001: 2008 - ISO 14001: 2004, BS OHSAS 18001:2007			

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