

# Uninterruptible Power Supply

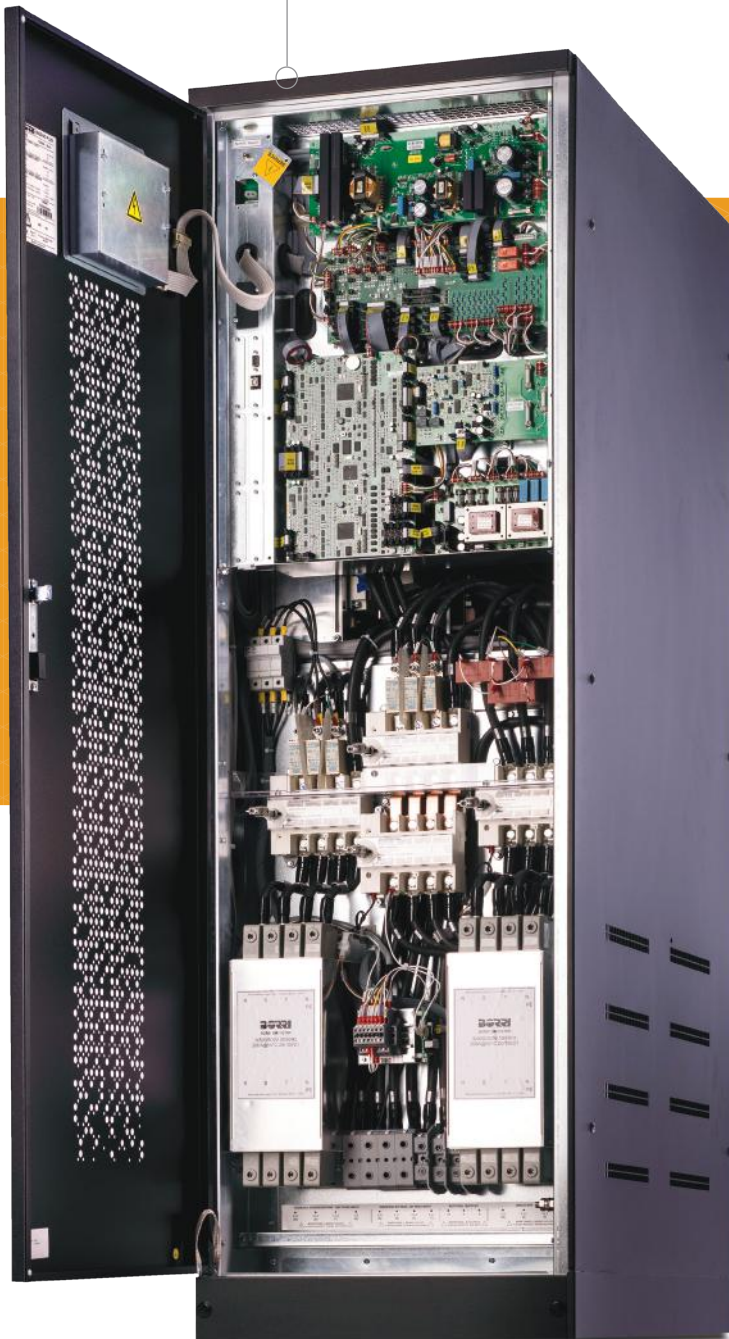
## Safety Behind The Socket



**starkstrom**  
a **Progility** company  
Powering Healthcare

# Starkstrom's Uninterruptible Power Supply System

Uninterruptible Power Supply (UPS) Systems are a critical part of a hospital's power supply infrastructure. When coupled with Isolated Power Supply (IPS) Systems and back-up generators, they provide the operating room and other critical care areas with continuity of power in the event of a supply failure. IEC 60364-7-710 and HTM06-01 state that in the event of loss of power, all medical locations where isolated power is installed ('Group 2' and 'Clinical Category 5' locations) require power to be resumed (for life supporting equipment) within a maximum of 0.5 seconds.



## Benefits to Customer

- Minimum amount of installation space
- Low running costs due to high efficiency
- No electrical system oversizing
- Easy commissioning
- Quick maintenance

Although there are different types of static UPS Systems (offline, line interactive, online), the HTM06-01 Standard relates to key components of the most common type which provides the highest level of protection – online double conversion UPS Systems. This means that the output is VFI (Voltage & Frequency Independent) allowing the critical load power to be constantly maintained by the UPS inverter, which in turn means the load does not see any mains borne interferences and delivers a zero-break transition from utility power to battery. The key components of a UPS System are batteries, rectifier/charger, a power inverter circuit, by-pass line and static switch. The batteries store energy when the mains supply is available, but in the event of mains failure, the battery charge is converted into an alternating current supply by means of the other key components.

# CertaUPS C500 & C500E Series



## Online double conversion

*Suitable for industry applications where space is limited, in particular within medical and IT environments*

Designed using the highest level of protection (Online Double Conversion), the CertUPS C500 and C500E tower series delivers up to 25% more usable power than other manufacturers thanks to a 0.9 output power factor. This range is extremely low maintenance and has been designed as a genuine 'easy parallel' UPS solution, where up to four units can be connected in parallel as and when required. This added flexibility to enable further capacity or redundancy, makes the new C500 and C500E a true future proof investment.

## CertaUPS C500 6kVA – 10kVA

- Comes complete with internal batteries as standard, eliminating the need for external battery cabinets minimising the footprint and therefore maximising floor space for other equipment.

## CertaUPS C500E 10kVA – 20kVA

- Can have either a three phase or single phase input applied to the UPS. The decision can be made during the point of installation and can be changed if an electrical supply needs to be upgraded or electrical loads have to be balanced.



# Borri B803IFXS & B8033FXS Series

## Online double conversion

*Suitable for server rooms, safety and emergency systems, building automation and medical equipment*

In normal mode the Borri B803IFXS and B8033FXS Series are a true online double conversion UPS power supply. Alternatively, they can be configured and programmed to run as a frequency converter or in smart online (SOL) mode as a line interactive system which further reduces energy costs. Their advanced design means that they can achieve high efficiency of >95% without compromising load protection. For additional redundancy or capacity up to 8 units can be connected in parallel giving a total scalable power output of 320kVA. This series has been designed to have a small footprint to save floor space and have front access to critical components for easy installation and maintenance.

## Borri B803IFXS 10kVA – 20kVA, 3/I

- Available as three phase in / one phase out UPS.

## Borri B8033FXS 10kVA – 20kVA, 3/I, 3/3

- Available as three phase in / one phase out UPS or as three phase in / three phase out UPS



# BORRI Ingenio Series

## Online double conversion

*Suitable for safety and emergency systems, medical equipment to all critical applications in health*

The Ingenio UPS Series are one of the highest performance power protection solutions in a compact design making it ideal for environments where space is a premium – delivering maximum power density. The Ingenio Series incorporates high double conversion efficiency and advanced high efficiency mode functions to deliver low running costs and minimal impact to the environment. The removable power modules, full frontal and installation access with integrated diagnostics makes for easy maintenance and servicing.



### **Borri Ingenio 30kVA – 50kVA, 3/3**

- Scalable up to six units in parallel for power or redundancy requirements; full IGBT technology with power factor corrected rectifier; internal batteries can be at full load for 10 minutes.

### **Borri Ingenio Plus 60kVA – 160kVA, 3/3**

- Features Ultra High Efficiency (UHF) mode achieving up to 99% efficiency; includes Borri's patented Green Conversion technology increasing efficiency and reducing switching stress on components

### **Borri Ingenio Max 200kVA, 3/3**

- Features UHF mode achieving up to 99% efficiency; includes three level (3-L) Green Conversion technology increasing efficiency and reducing switching stress on components; Green Conversion Battery Care for extended battery service life

# Borri B9000FXS & B9600FXS Series

## Online double conversion

*Suitable for safety and emergency systems, medical equipment to all critical applications in health*

The Borri B9000FXS and B9600FXS UPS units are amongst the leading ultra-high efficiency systems available today and are ideal for emergency services and critical applications. This transformer based range can be configured to operate in parallel, offering an N+1 configuration or alternatively as a power expansion option. The parallel control system tightly manages both active and reactive type loads, allowing for intelligent load/current sharing between each individual module. This series also features smart online (SOL) mode which significantly reduces energy consumption as the load is fed primarily through the by-pass line.

### **Borri 9000FXS 60kVA – 300kVA, 3/3**

- Scalable up to eight units in parallel for power or redundancy requirements; full IGBT technology with power factor corrected rectifier.

### **Borri 9600FXS 400kVA – 800kVA, 3/3**

- Scalable in UPS modules up to 6.4MVA; a tier four UPS design can be achieved with a zero break transfer through two independent groups of synchronised UPS units.



# External Maintenance By-Pass Panels

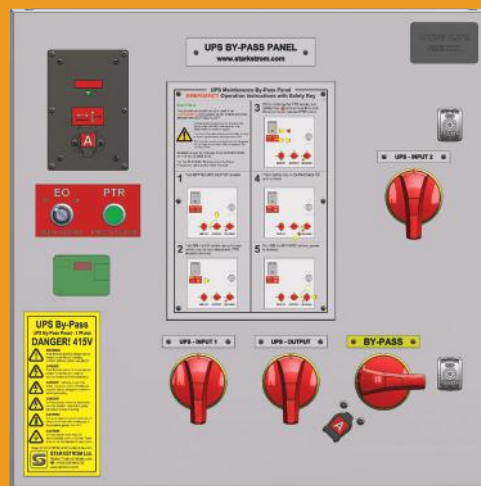
It is a requirement of HTM06-1 that any UPS system feeding Group 2 / Category 5 Clinical Area be installed with an External UPS Maintenance By-Pass Panel. Starkstrom External UPS Maintenance By-Panels are suitable for single UPS systems and are available in two models:

- Compact – for single UPS systems ranging from 6kVA 1:1 to 10kVA 1:1
- Standard – for single UPS systems ranging from 6kVA 1:1 to 80kVA 3:3

Both models can be made available with UPS ratings above their upper limits, with advanced features and for parallel system configurations. The By-Pass Panel allows a manual 'break before make' transfer of power from the UPS to normal mains power whilst the UPS is isolated for routine maintenance, testing, repair or battery replacement. This ensures the clinical area can continue to function with minimal interruption. It allows power to be restored quickly in the event of an emergency.



Compact



Standard

## Batteries

All batteries used for UPS units are Valve Regulated Lead Acid batteries compliant to BS60896-2/22 required for medical applications. Key characteristics of these batteries are a threaded insertion connection post, flame retardant case material and 10-year design life. In practical terms, even with regular maintenance and good environmental conditions, the batteries are typically changed at around 80% of their design life.

# Technical Specification

<b>Power Capacity</b>	6 kVA to 800 kVA
<b>Input Voltage</b>	110-276 VAC single phase to 240/415 three phase + N
<b>Input Frequency</b>	50/60 Hz (45 – 65 Hz)
<b>Input Power Factor</b>	≥0.99
<b>Output Voltage</b>	208 VAC single phase to 240/415 VAC three phase + N
<b>Output Frequency</b>	50 – 60 Hz
<b>Output Efficiency</b>	>95%
<b>Output Options</b>	Parallel capacity/redundancy; isolation transformer; external bypass; battery thermal pole; top cable entry
<b>Dimensions (w x d x h)</b>	(260 x 550 x 708) mm to (1217 x 853 x 1902) mm
<b>Weight</b>	26 g to 1200 kg

Note: The above table is to give an idea of the technical specification range.  
Please ask for Technical Data Sheets for specific products.

## S-equip™ Turnkey Solution

The S-equip™ Turnkey Solution is for critical areas in hospitals to improve patient outcomes and workflow efficiencies. By partnering with Starkstrom, you will be supported with a wide range of experts who will design, build, equip, commission and service care area facilities such as Hybrid ORs to meet the needs of stakeholders. To find out more about the S-equip™ Turnkey Solution, please contact us.



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