



UPS for process and service industry



UPS for ICT

UPS for SOHO and SME



Who we are

Borri is a company specializing in the custom design, manufacturing and servicing of power supply protection systems in key sectors such as ICT, industrial processes and service, oil & gas and energy, utilities, also of static conversion for renewable energy sources. The Borri research and development department is among the most complete regarding the coverage of the various disciplines involved in power conversion. On the strength of proven expertise in product customization and a continuous quest for excellence, Borri is named in more than 40 vendor lists and enjoys a position of prominence in the oil & gas sector.

Similarly, with extensive experience in various branches of power electronics such as UPS systems for data centers, inverters for renewable energy projects and storage systems.

Borri is a dependable partner able to offer power supply solutions used in ICT applications, in the process industry and for services, with numerous installations to its credit UPSaver[®], the most recent three-phase solution, based on Green Conversion patent technology, is able to guarantee unparalleled energy savings, and the best PUE for data centers with lower environmental impact, proof of the ongoing company commitment to innovation.

Under the Astrid brand, Borri offers a wide range of renewable energy solutions, reflecting its commitment to our pursuit of sustainable development.

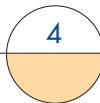
Headquartered in Italy, with 15,000 m² of production area and a fully equipped inspection and testing area, the company is able to count on more than 80 years of experience, multidisciplinary R&D and a highly application specialized custom engineering capability.

Borri has a presence on all 5 continents with thousands of installations worldwide, professional staff and a network of partners able to provide you value added technical support and services.



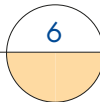
UPS 450-2000 VA Line-interactive 1-phase GIOTTO

For PCs, and peripherals. Ideal for home and small office



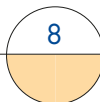
UPS 1000-3000 VA On-line 1-phase GALILEO

For networking, emergency and safety systems. Ideal for small and medium enterprises

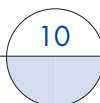


UPS 6-10 kVA On-line 1-phase LEONARDO

For server rooms, TLC equipment, emergency and safety systems



Single phase UPS SOFTWARE



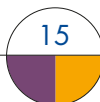
UPS 10-20 kVA 3/1 and 3/3 phase B8031/B8033 FXS

For servers, TLC equipment, emergency, safety systems and industrial automation



UPS 30-50 kVA 3/3 phase INGENIO

For server rooms, TLC equipment, emergency, safety systems and industrial automation



UPS 60-160 kVA 3/3 phase INGENIO PLUS

For small-medium data centers, process automation and service industry



UPS 60-300 kVA 3/3 phase B9000FXS

For data centers, medical equipment, process automation, infrastructure and service industry



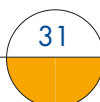
UPS 400-800 kVA 3/3 phase B9600FXS

For data centers, infrastructure, process and service industry



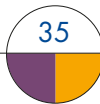
UPSAVER 100 kW-12.8 MW

4.0 UPS dedicated to ICT for unmatched energy savings

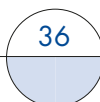


STS 25-3000 A STS100/STS300

Static Transfer Switches



Three phase UPS TELESERVICE





GIOTTO
450-2000 VA
Line-interactive

**Single phase UPS
for personal computers
servers
TLC equipment
Ideal for
SOHO and SME**



LEONARDO
6 -10 kVA
On-line
Tower and Rack/Tower

BORRI



GALILEO
1000-3000 VA
On-line
Tower and Rack/Tower

GIOTTO

450-2000 VA

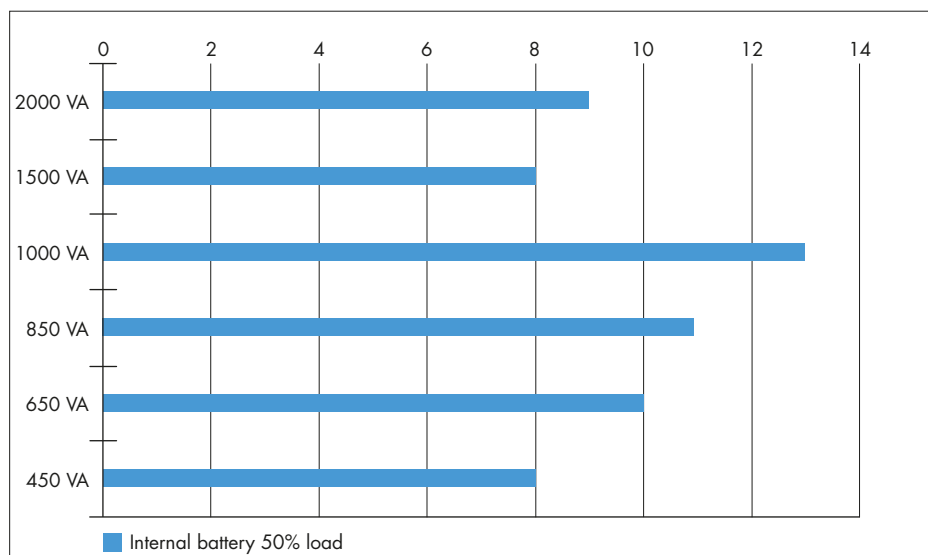
Line-interactive 1-phase
For PCs and peripherals
Ideal for home and
small office



Features and benefits

- User-friendly UPS ensuring compact protection for a wide range of needs:
 - Best power protection for PC from 450 to 850 VA with one output receptacle (IEC 320-C13) and one Schuko
 - Advanced power protection from 1000 to 2000 VA with four output receptacles (IEC 320-C13) and one Schuko for high performance PC and peripherals
- Instantaneous battery back-up power and electrical interference protection
- Plug and Play installation easy to set up also for first user
- Compact and noise-free running to be placed anywhere at home or office
- Energy efficient ensuring lowest impact on energy costs.
- Intuitive LCD display provides easy-to-read UPS status and power information
- Audible alarm alerts upon utility power and UPS status change
- Easy User-replaceable battery
- AVR technology stabilizing output voltage to protect your electronics over a wide range of mains quality issues
- Advanced battery management extending battery life
- Internet Modem / LAN protection via RJ-11/45 plug
- USB communication port providing UPS managements
- Borri Power Guardian user-friendly UPS management software free downloadable at www.borri.it/support (for more info see p.10).

Autonomy time in minutes with internal battery



GIOTTO technical data

| Rating (VA) | 450 | 650 | 850 | 1000 | 1500 | 2000 |
|---------------------------|-------------|-----|-----|-------------|------|------|
| Nominal power (W) | 270 | 380 | 500 | 600 | 900 | 1200 |
| UPS dimensions WxDxH (mm) | 100x292x140 | | | 148x315x198 | | |
| UPS weight (kg) | 4 | 5 | 5.5 | 9 | 10.5 | 11.8 |

Input

| | |
|---------------------|--------------------|
| Connection type | 1 IEC 320-C14 |
| Nominal voltage | 230 Vac |
| Voltage range | 160÷290 Vac |
| Frequency and range | 50/60 Hz, 45÷65 Hz |

Output

| | | |
|-----------------|----------------------------|----------------------------|
| Connection type | 1 IEC 320-C13 and 1 Schuko | 4 IEC 320-C13 and 1 Schuko |
| Nominal voltage | 230 Vac single phase | |
| Frequency | 50/60 Hz | |
| Waveform | Simulated sine wave | |

Battery

| | | | | | | | |
|-----------------------|-----------|---|----|----|----|---|---|
| Autonomy time (min) ♦ | 50% load | 8 | 10 | 11 | 13 | 8 | 9 |
| | 100% load | 3 | 3 | 3 | 3 | 3 | 3 |

Connectivity and function extensions

| | |
|---------------|---|
| Front panel | LCD, ON/OFF button |
| Communication | Included: USB. Compatible platforms: Microsoft Windows, Linux, Mac |

Environmental

| | |
|-----------------------------|---|
| Operating temperature range | 0°C ÷ +40°C |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m |
| Audible noise at 1m (dBA) | <40 |
| Relative humidity | 0-95% |

Standards and certifications

| | |
|---|--|
| Marking | CE |
| Safety | IEC/EN 62040-1 |
| EMC | IEC/EN 62040-2 |
| Quality assurance, Environment, Health and Safety | ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007 |

♦ Measurement conditions: optimised parameters, battery full charged, Power Factor (PF) 0.6



GALILEO

1000-3000 VA

On-line 1-phase

For networking equipment

Ideal for small and medium enterprises

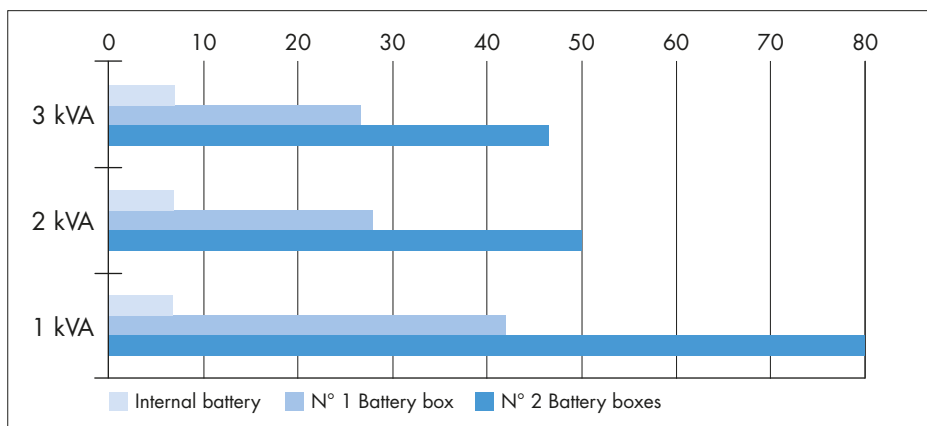


Features and benefits

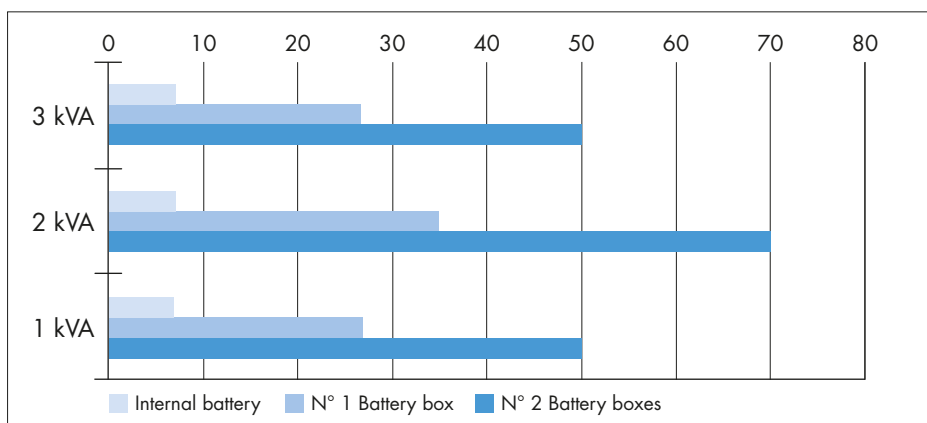
- On-line double conversion UPS from 1000 to 3000 VA, Tower and 2U Rack/Tower from three to six output receptacles (IEC 320-C13) and one or two Schuko
- Rack/Tower convertible design to protect your investment when migrating from tower to rack-mount environment. Both UPS and display panel can be rotated
- Easy installation and set up, user-replaceable and upgradable battery
- Intuitive LCD display providing easy-to-read UPS status and power information
- Audible alarm alerts upon utility power and UPS status change
- Smart cooling system ensuring further energy savings
- Programmable switched outlet group for setting load priorities

- Active harmonic power quality control ensuring 0.99 input PF and THDi<3% for maximum compatibility with sources
- Automatic self test and advanced battery management maximizing battery performance and extending battery life
- Battery extension box allowing additional autonomy time to be quickly added
- Remote power off for immediate UPS shutdown in case of emergency
- USB communication port providing UPS management
- One slot auto-sensing communication cards
- Borri Power Guardian user-friendly UPS management software with alerts upon main power failures and system shutdown notification via SMS and email (for more info see p.10), free downloadable at www.borri.it/support

Autonomy time in minutes for Rack/Tower UPS



Autonomy time in minutes for Tower UPS



Main options

- SNMP card to send UPS status to BMS's by Ethernet connection and SNMP or ModBus over IP protocol to monitor UPS status by any internet browser from workstations and to receive SMS or e-mail alerts from the UPS on any portable device
- Contact relay card to send UPS status to PLC's, SCADA's or AS400's by voltage free SPDT contacts
- Additional battery charger for external battery box (for more info visit www.borri.it)



GALILEO technical data

| UPS Type | T * | T * | T * | RT (2U)** | RT (2U)** | RT (2U)** |
|---------------------------|-------------|-------------|-------------|------------|------------|------------|
| Rating (VA) | 1000 | 2000 | 3000 | 1000 | 2000 | 3000 |
| Nominal power (W) | 900 | 1800 | 2700 | 900 | 1800 | 2700 |
| UPS dimensions WxDxH (mm) | 144x367x236 | 151x444x322 | 189x444x322 | 440x390x88 | 440x475x88 | 440x600x88 |
| UPS weight (kg) | 11.2 | 18.8 | 24.9 | 12.0 | 17.0 | 26.5 |

Input

| | | | | | | |
|---------------------------|----------------------|--|--|------|--|--|
| Connection type | 1 IEC 320-C14 | | | | | |
| Nominal voltage | 230 Vac single phase | | | | | |
| Voltage range | 195÷260 Vac | | | | | |
| Frequency and range | 50/60 Hz, 45÷65 Hz | | | | | |
| Power factor | 0.98 | | | 0.99 | | |
| Current distortion (THDi) | <3% | | | | | |

Output

| | | | | | | |
|---------------------|---|---------------------------|---------------------------|---------------|---------------|--|
| Connection type | 3 IEC 320-C13 1 Schuko | 3 IEC 320-C13 2 Schuko | 6 IEC 320-C13 2 Schuko | 3 IEC 320-C13 | 6 IEC 320-C13 | |
| Nominal voltage | 230 Vac +/-1% single phase | | | | | |
| Frequency | 50/60 Hz | | | | | |
| Power factor | Any power factor up to 0.9 lagging or leading without power derating | | | | | |
| Overload capability | 105% continuous, 106-120% for 30 seconds, 121-150% for 10 seconds, >150% immediately transfer to bypass | | | | | |
| Mode of operation | On-line, Eco mode | | | | | |

Battery

| | | | | | | | |
|--|-----------|----|----|----|----|----|----|
| Autonomy time internal battery (min)◆ | 50% load | 12 | 13 | 15 | 12 | 13 | 15 |
| | 100% load | 6 | 6 | 6 | 6 | 6 | 6 |

Connectivity and function extensions

| | |
|---------------|---|
| Front panel | Display LCD, LED signaling, function keys |
| Communication | Included: USB, EPO Optional: RS485 card, dry contact card, SNMP card, RS232 card. Compatible platforms: Microsoft Windows, Linux, Mac |

Environmental

| | |
|-----------------------------|---|
| Operating temperature range | 0°C ÷ +40°C |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m |
| Audible noise at 1m (dBA) | <50 |
| Relative humidity | 0-90% |

Standards and certifications

| | |
|--|-------------------------------------|
| Marking | CE |
| Safety | IEC/EN 62040-1 |
| EMC | IEC/EN 62040-2 |
| Quality assurance, Environment, Health and Safety | ISO 14001:2004, BS OHSAS 18001:2007 |

*Tower **Rack/Tower ◆ Measurement conditions: optimised parameters, battery full charged, Power Factor (PF) 0.7



LEONARDO

6-10 kVA

On-line 1-phase

For server rooms

TLC equipment

Emergency and safety systems



Features and benefits

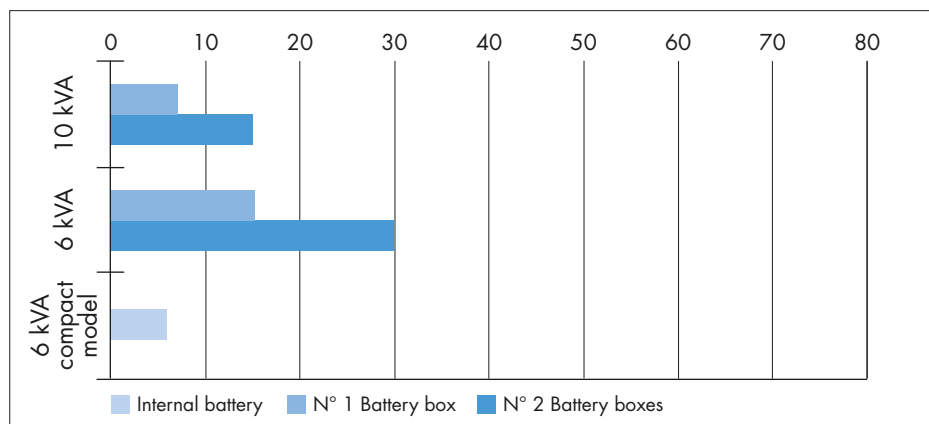
- On-line double conversion UPS from 6 to 10 kVA, Tower and 2U or 3U Rack/Tower
- Parallel redundant configuration maximizing the availability
- Rack/Tower convertible design to protect your investment when migrating from tower to rack-mount environment. Both UPS and display panel can be rotated
- Easy installation and set up, user-replaceable and upgradable battery
- Intuitive LCD display providing easy-to-read UPS status and power information
- Audible alarm alerts upon utility power and UPS status change
- Smart cooling system ensuring further energy savings
- Active harmonic power quality control ensuring 0.99 input PF and THDi < 3% for maximum upstream sources

- Automatic self test and advanced battery management maximizing battery performance and extending battery life
- Battery extension box allowing additional autonomy time to be quickly added
- Remote emergency power off to guarantee your piece of mind in critical applications
- Internal manual bypass for safe and easy maintenance
- RS232 communication port providing UPS management
- Two slots auto-sensing communication cards
- Borri Power Guardian user-friendly UPS management software with alerts upon main power failures and system shutdown notification via SMS and email (for more info see p.10), free downloadable at www.borri.it/support

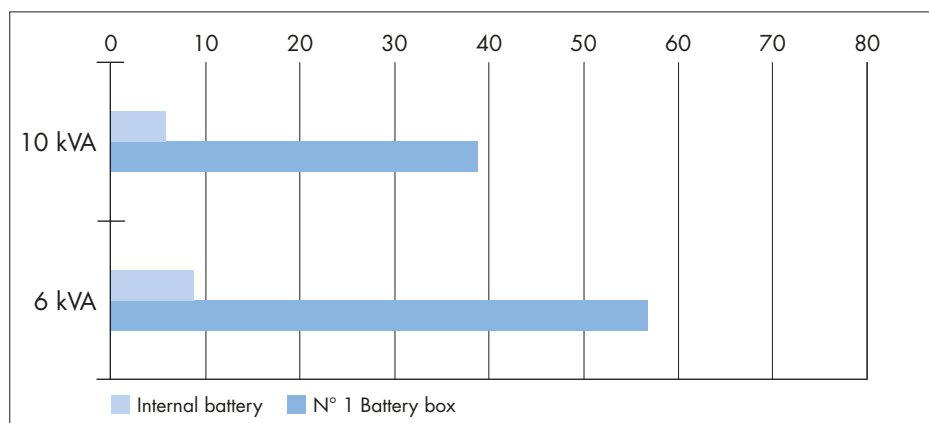
Main options

- SNMP card to send UPS status to BMS's by Ethernet connection and SNMP or ModBus over IP protocol to monitor UPS status by any internet browser from workstations and to receive SMS or e-mail alerts from the UPS on any portable device
- Contact relay card to send UPS status to PLC's, SCADA's or AS400's by voltage free SPDT contacts
- Additional battery charger for external battery box (for more info visit www.borri.it)

Autonomy time in minutes for Rack/Tower UPS



Autonomy time in minutes for Tower UPS



LEONARDO technical data

| UPS Type | T * | T * | RT (2U)*** | RT (4U)** | RT (3U)*** |
|---------------------------|-------------|-------------|------------|-------------|-------------|
| Rating (kVA) | 6 | 10 | 6 | 6 | 10 |
| Nominal power (kW) | 5.4 | 9 | 5.4 | 5.4 | 9 |
| UPS dimensions WxDxH (mm) | 290x645x748 | 290x645x748 | 440x680x88 | 440x680x176 | 440x680x132 |
| UPS weight (kg) | 86 | 96 | 24 | 52 | 26 |

Input

| | | |
|---------------------------|-----------------------------------|----------------------|
| Connection type | Hardwired 2w (input), 2w (bypass) | Hardwired 2w (input) |
| Nominal voltage | 230 Vac single phase | |
| Voltage range | 195÷260 Vac | |
| Frequency and range | 50/60 Hz, 45÷65 Hz | |
| Power factor | 0.99 | |
| Current distortion (THDi) | <6% | |

Output

| | | |
|---------------------|---|--|
| Connection type | Hardwired 2w | |
| Nominal voltage | 230 Vac +/- 1% single phase | |
| Frequency | 50/60 Hz | |
| Power factor | Any power factor up to 0.9 lagging or leading without power derating | |
| Overload capability | 104% continuous, 105-150% for 160 seconds, >150% immediately transfer to bypass | |
| Mode of operation | On-line, Eco mode | |

Battery

| | | | | | | |
|---------------------------------------|-----------|----|----|------------------|----|------------------|
| Autonomy with internal battery (min)◆ | 50% load | 25 | 17 | external battery | 15 | external battery |
| | 100% load | 9 | 6 | external battery | 6 | external battery |

Connectivity and function extensions

| | |
|---------------|---|
| Front panel | Display LCD, LED signaling, function keys |
| Communication | Included: RS232 card, USB, EPO Optional: RS485 card, dry contact card, SNMP card, second RS232 card Compatible platforms: Microsoft Windows, Linux, Mac |

Environmental

| | |
|-----------------------------|---|
| Operating temperature range | 0°C ÷ +40°C |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m |
| Audible noise at 1m (dBA) | <50 |
| Relative humidity | 0-90% |

Standards and certifications

| | |
|---|--|
| Marking | CE |
| Safety | IEC/EN 62040-1 |
| EMC | IEC/EN 62040-2 |
| Quality assurance, Environment, Health and Safety | ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007 |

*Tower with internal battery **Rack/Tower with internal battery ***Rack/Tower without internal battery ◆ Measurement conditions: optimised parameters, battery full charged, cos Ø 0.7



Single phase UPS SOFTWARE

Borri Power Guardian is free user-friendly UPS monitoring software, which provides also in your absence safe system shutdown in the event of blackout or other computer power problems and reveals the status of UPS.



Features and benefits

- Fast, easy installation and configuration via USB or RS232 even for first-time users
- Automatic orderly system shutdown: it closed all applications and safely shutdowns
- Computer preventing potential data corruption and hardware damage
- Alerts of main power failures and system shutdowns notification via SMS and email
- Automatic self-test of UPS and battery status ensuring early detection of a battery that needs to be replaced
- Real time UPS parameters and power status at glance. It summarizes graphically and numerically power problems such as blackouts or electrical noise over time and UPS information such as input and output voltage, frequency voltage, temperature, loads and battery capacity.
- It allows tailoring settings such as UPS commands to be performed
- Available for MAC and Microsoft operating systems: see complete list at www.borri.it/support
- Download Borri Power Guardian free software at: www.borri.it/support.



B8031/B8033FXS
10-20 kVA
For servers
TLC equipment
Emergency and
safety systems
Industrial
automation



B8031/B8033FXS
10 to 20 kVA
On-line double
conversion
Transformer free
Full IGBT technology
Paralleling up to 120 kVA

BORRI

B8031/B8033FXS

10-20 kVA

for servers
TLC equipment
Emergency and
safety systems
Industrial
automation



Features and benefits

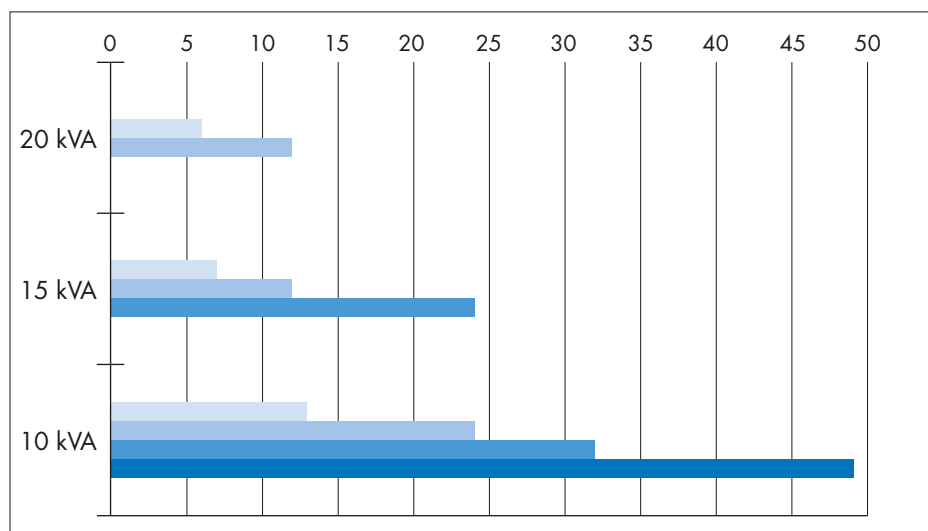
- High double conversion efficiency and ECO mode for low running costs and environmental impact.
- Transformer free design for light small size layout.
- Removable power modules architecture and built-in diagnostics for easy maintenance and very low MTTR.
- Hot connection/disconnection of parallel units for easy system resizing.
- Full IGBT technology and electronic PFC, ensuring 0.99 input PF and THDi<3% for maximum upstream sources compatibility.
- Wide range of configurations with internal batteries for low TCO compact solutions.
- High power battery charger, suiting long autonomy applications.
- Dual DSP plus microcontroller logics for top performance and reliability.
- CAN-bus based distributed parallel control ensuring high load sharing accuracy and no single point of failure.
- Comprehensive set of communication options for total remote monitoring of equipment operation.
- Included bypass contactor for complete backfeed protection and operators' safety without additional installation costs.
- Fully compliance with all international product standards for maximum quality guarantee.

Main options

- Isolation transformer.
- Transformers/autotransformers for voltage adjustment.
- Battery voltage temperature compensation.
- External maintenance bypass wall-mounted box.
- Battery fuse switch wall-mounted box.
- Associated battery cabinets for long autonomy times.
- Parallel kit for load sharing.
- Load-sync for single UPS units.
- Input terminals for remote EPO, external manual bypass auxiliary contact, diesel mode.
- Separate bypass input for B8033FXS.



Autonomy time in minutes with different types of internal batteries



B8031FXS - B8033FXS technical data

| Rating (kVA) | 10 | 15 | 20 |
|---|---|---------|---|
| Nominal power (kW) | 9 | 13.5 | 18 |
| UPS dimensions WxDxH (mm) | 450x670x1200 | | |
| UPS weight (kg) | 100 | 110 | 110 |
| UPS weight with internal battery (kg) | Max.285 | Max.275 | Max.275 |
| External battery module dimensions WxDxH (mm) | 500x670x1200 | | |
| Battery configuration | Internal or external, 360÷372 cells, VRLA (other options) | | |
| Max autonomy with int. battery 70% load (min) | 49 | 24 | 12 |
| Input | B8031FXS (10-15-20 kVA) | | B8033FXS (10-15-20 kVA) |
| Connection type | Hardwired 4w (rectifier), 2w (bypass) | | Hardwired 4w (separate bypass input available on request) |
| Nominal voltage | 400 Vac 3-phase with neutral (rectifier) 220/230/240 Vac 1-phase (bypass) | | 400 Vac 3-phase with neutral (rectifier) 380/400/415 Vac 3-phase with neutral (bypass) |
| Voltage tolerance | -20%, +15% | | |
| Frequency and range | 50/60 Hz (45÷65 Hz) | | |
| Power factor | 0.99 | | |
| Current distortion (THDi) | <3% | | |
| Output | B8031FXS (10-15-20 kVA) | | B8033FXS (10-15-20 kVA) |
| Connection type | Hardwired 2w | | Hardwired 4w |
| Nominal voltage | 220/230/240 Vac 1-phase | | 380/400/415 Vac 3-phase with neutral |
| Frequency | 50/60 Hz | | |
| Voltage regulation | ±1% static; dynamic: IEC/EN 62040-3 Class 1 | | |
| Power factor | up to 0.9, lagging or leading without power derating | | |
| Overload capacity | Inverter: 101÷125% for 10 min, 126÷150% for 30 s, >150% for 10 s; bypass: 150% continuous, 1000% for 1 cycle | | |
| Efficiency (AC/AC)* | up to 98% | | |
| Classification as per IEC/EN 62040-3 | VFI-SS-111 | | |
| Connectivity and function extensions | | | |
| Front panel | Graphic display, mimic LED panel and keyboard, local EPO | | |
| Remote communication | Included: remote communication terminal block for battery breaker auxiliary contact. Optional: input terminal block (remote emergency power off, battery circuit breaker aux. cont., external maintenance bypass circuit breaker aux. cont., diesel mode aux. cont.); SNMP adapter (Ethernet), Web interface (Ethernet), from ModBus-RTU to PROFIBUS DP adapter; SPDT contact relay board; remote system monitoring panel; UPS managing and server shutdown software | | |
| Optional function extensions | Isolation transformer; transformers/autotransformers for voltage adjustment; external maintenance bypass; custom battery cabinets; wall-mounted battery fuse switch box; battery thermal probe; parallel kit, load-sync for single UPS | | |
| System | | | |
| Protection degree | IP 20 | | |
| Colour | RAL 7016 | | |
| Installation layout | 10 cm wall-gap, side by side installation allowed | | |
| Accessibility | Front and top access, bottom cable entry | | |
| *according to IEC/EN 62040-3 | | | |
| Other features | | | |
| Environmental | | | |
| Operating temperature range | 0°C ÷ +40°C | | |
| Storage temperature range | -10°C ÷ +70°C | | |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m | | |
| Audible noise at 1 m (dBA) | <52 | | |
| Standards and certifications | | | |
| Quality assurance, environment, health and safety | ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007 | | |
| Safety | IEC/EN 62040-1 | | |
| EMC | IEC/EN 62040-2 | | |
| Environmental aspects | IEC/EN 62040-4 | | |
| Test and performance | IEC/EN 62040-3 | | |
| Protection degree | IEC 60529 | | |
| Marking | CE | | |

B8031/8033FXS series options

| | Description | When do I use it |
|-----------------|--|--|
| | Parallel kit | When the unit is to be paralleled for load sharing |
| | Load-sync for single units | To synchronize single units' output for no-break load transfers by downstream static transfer switches |
| <p>INCLUDED</p> | Backfeed protection bypass contactor | To be fully protected against backfeed energy upon static bypass failure |
| | 1-phase output isolation transformer for B8031FXS | To galvanically isolate UPS from load or to change system's earth arrangement |
| | 3-phase input isolation transformer for B8033FXS | To galvanically isolate UPS from load or to change system's earth arrangement |
| | Battery fused switch box | To disconnect and protect an external battery pack (wall mounted box) |
| | Internal battery temperature probe | When the unit has internal batteries, for charging voltage compensation with temperature |
| | Internal battery + UPS temperature probe | When the unit has internal batteries, for charging voltage compensation with temperature and UPS temperature monitoring |
| | External battery temperature probe | When the unit has external batteries, for charging voltage compensation with temperature (10 m cable length) |
| | Dry contact relay card | To monitor UPS status by a LED panel from a remote control room |
| | Remote monitoring panel | To monitor UPS status by a LED panel from a remote control room |
| | RS485 ModBus-RTU port | To send UPS status to BMS's by RS485 connection and ModBus-RTU protocol. For telemonitoring and teleservice |
| | Web/SNMP Adapter | To send UPS status to BMS's by Ethernet connection and SNMP or ModBus over IP protocol. To monitor UPS status by any internet browser from workstations. To receive SMS or e-mail alerts from the UPS on any portable device |
| | Input terminal block for remote EPO | When the Emergency Power Off (EPO) has to be commanded by a remote control button |
| | Input terminal block for external manual bypass switch auxiliary contact | When there is an external maintenance bypass switch, for state monitoring |
| | Input terminal block for external battery switch auxiliary contact | When there is an external battery switch, for state monitoring |
| | Input terminal block for diesel mode contact | When battery recharge has to be inhibited over genset operation |

INGENIO
30-50 kVA
For server rooms
TLC equipment
Emergency and
safety systems
Industrial
automation



INGENIO
30 to 50 kVA
Three phase
On-line
double conversion
Transformer free
Full IGBT technology
Paralleling up to 300 kVA

BORRI

INGENIO

30-50 kVA

For server rooms
TLC equipment
Emergency and
safety systems
Industrial
automation

Features and benefits

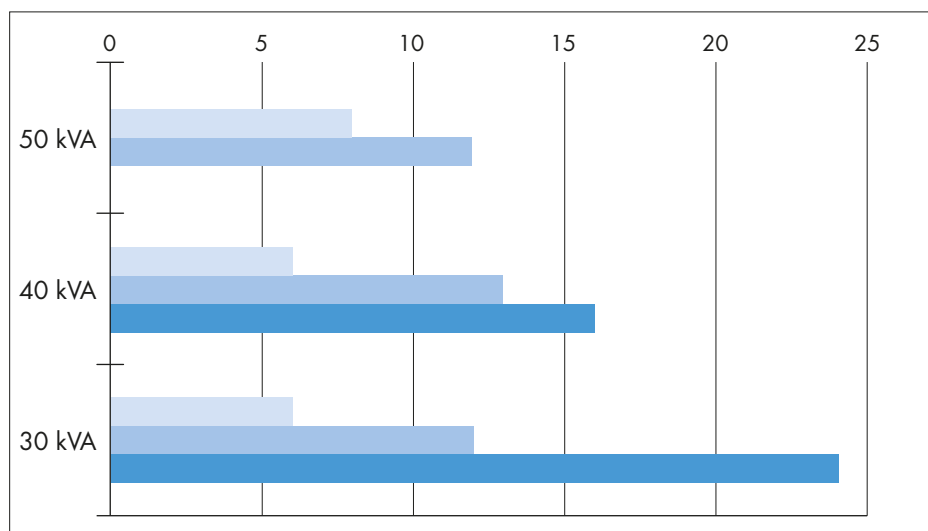
- High double conversion efficiency and ECO mode for low running costs and environmental impact.
- Transformer free design for light small size layout.
- Removable power modules architecture and built-in diagnostics for easy maintenance and very low MTTR.
- Hot connection/disconnection of parallel units for easy system resizing.
- Full IGBT technology and electronic PFC, ensuring 0.99 input PF and THDi<3% for maximum upstream sources compatibility.
- Wide range of configurations with internal batteries for low TCO compact solutions.
- High power battery charger, suiting long autonomy applications.
- Dual DSP plus microcontroller logics for top performance and reliability.
- CAN-bus based distributed parallel control ensuring high load sharing accuracy and no single point of failure.
- Comprehensive set of communication options for total remote monitoring of equipment operation.
- Fully compliance with all international product standards for maximum quality guarantee.

Main options

- Isolation transformer.
- Transformers/autotransformers for voltage adjustment.
- Battery voltage temperature compensation.
- External maintenance bypass wall-mounted box.
- Battery fuse switch wall-mounted box.
- Associated battery cabinets for long autonomy times.
- Parallel kit.
- Load-sync for single UPS units.
- Input terminals for remote EPO, external manual bypass auxiliary contact, diesel mode.
- Separate bypass input.
- Backfeed protection bypass contactor.



Autonomy time in minutes with different types of internal batteries



INGENIO technical data

| Rating (kVA) | 30 | 40 | 50 |
|---|---|-----|-----|
| Nominal power (kW) | 27 | 36 | 45 |
| UPS dimensions WxDxH (mm) | 500x940x1500 | | |
| UPS weight (kg) | 140 | 150 | 190 |
| UPS weight with int. battery (kg) | 500 | 510 | 550 |
| Battery configuration | Internal or external, 360÷372 cells, VRLA (other options) | | |
| Max autonomy with int. battery 70% load (min) | 24 | 16 | 12 |

Input

| | |
|---------------------------|---|
| Connection type | Hardwired 4w (separate bypass input available on request) |
| Nominal voltage | 400 Vac 3-phase with neutral (rectifier) 380/400/415 Vac 3-phase with neutral (bypass) |
| Voltage tolerance | -20%, +15% (rectifier) ±10% (bypass) |
| Frequency and range | 50/60 Hz, 45÷65 Hz |
| Power factor | 0.99 |
| Current distortion (THDi) | <3% |

Output

| | |
|--------------------------------------|--|
| Connection type | Hardwired 4w |
| Nominal voltage | 380/400/415 3-phase with neutral |
| Frequency | 50/60 Hz |
| Voltage regulation | ±1% static; dynamic: IEC/EN 62040-3 Class 1 |
| Power factor | up to 0.9, lagging or leading without power derating |
| Overload capacity | Inverter: 101÷125% for 10 min, 126÷150% for 30 s, >150% for 100 ms, bypass: 150% continuous, 1000% for 1 cycle |
| Efficiency (AC/AC)* | up to 98% |
| Classification as per IEC/EN 62040-3 | VFI-SS-111 |

Connectivity and function extensions

| | |
|-----------------------------|--|
| Front panel | Graphic display, mimic LED panel and keyboard, local EPO |
| Remote communication | Included: RS232 card, USB; terminal block for battery breaker auxiliary contact Optional: input terminal block (remote emergency power off, external maintenance bypass circuit breaker aux. cont., diesel mode aux. cont.); SNMP adapter (Ethernet), Web interface (Ethernet), from ModBus-RTU to PROFIBUS DP adapter; SPDT contact relay board; remote system monitoring panel; UPS managing and server shutdown software |
| Optional function extension | Isolation transformer; transformers/autotransformers for voltage adjustment; external maintenance bypass; custom battery cabinets; wall-mounted battery fuse switch box; battery thermal probe; parallel kit and load-sync for single UPS |

System

| | |
|---------------------|---|
| Protection degree | IP 20 |
| Colour | RAL 9005 |
| Installation layout | Wall and side by side installation allowed; 50 cm clearance on one side with internal battery |

*according to IEC/EN 62040-3

Other features

Environmental

| | |
|-----------------------------|---|
| Operating temperature range | 0°C ÷ +40°C |
| Storage temperature range | -10°C ÷ +70°C |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m |
| Audible noise at 1 m (dBA) | <52 |

Standards and certifications

| | |
|---|--|
| Quality assurance, environment, health and safety | ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007 |
| Safety | IEC/EN 62040-1 |
| EMC | IEC/EN 62040-2 |
| Environmental aspects | IEC/EN 62040-4 |
| Test and performance | IEC/EN 62040-3 VFI-SS-111 |
| Protection degree | IEC 60529 |
| Marking | CE |

INGENIO 30-40-50 kVA series options

| | Description | When do I use it |
|--|--|--|
| | Parallel kit | When the unit is to be paralleled for load sharing |
| | Load-sync for single units | To synchronize single units' output for no-break load transfers by downstream static transfer switches |
| | Backfeed protection bypass contactor | To be fully protected against backfeed energy upon static bypass failure |
| | Input isolation transformer | To galvanically isolate UPS from load or to change system's earth arrangement |
| | Battery fused switch box | To disconnect and protect an external battery pack (wall mounted box) |
| | Internal battery temperature probe | When the unit has internal batteries, for charging voltage compensation with temperature |
| | Internal battery + UPS temperature probe | When the unit has internal batteries, for charging voltage compensation with temperature and UPS temperature monitoring |
| | External battery temperature probe | When the unit has external batteries, for charging voltage compensation with temperature (10 m cable length) |
| | Dry contact relay card | To send UPS status to PLC's, SCADA's or AS400's by voltage free SPDT contacts |
| | Remote monitoring panel | To monitor UPS status by a LED panel from a remote control room |
| | RS485 ModBus-RTU port | To send UPS status to BMS's by RS485 connection and ModBus-RTU protocol. For telemonitoring and teleservice |
| | Web/SNMP Adapter | To send UPS status to BMS's by Ethernet connection and SNMP or ModBus over IP protocol. To monitor UPS status by any internet browser from workstations. To receive SMS or e-mail alerts from the UPS on any portable device |
| | Input terminal block for remote EPO | When the Emergency Power Off (EPO) has to be commanded by a remote control button |
| | Input terminal block for external battery switch auxiliary contact | When there is an external maintenance bypass switch, for state monitoring |
| | Input terminal block for external battery switch auxiliary contact INCLUDED | When there is an external battery switch, for state monitoring |
| | Input terminal block for diesel mode contact | When battery recharge has to be inhibited over genset operation |

INGENIO PLUS
60-160 kVA
For small-medium
data centers
Process automation
Service industry



BORRI

INGENIO PLUS
60 to 160 kVA
Three phase
On-line double
conversion
Transformer free
Full IGBT technology
Paralleling up to 960 kVA

Complete brochure
available

INGENIO PLUS

60-160 kVA

For small-medium data centers
Process automation
Service industry



Features and benefits

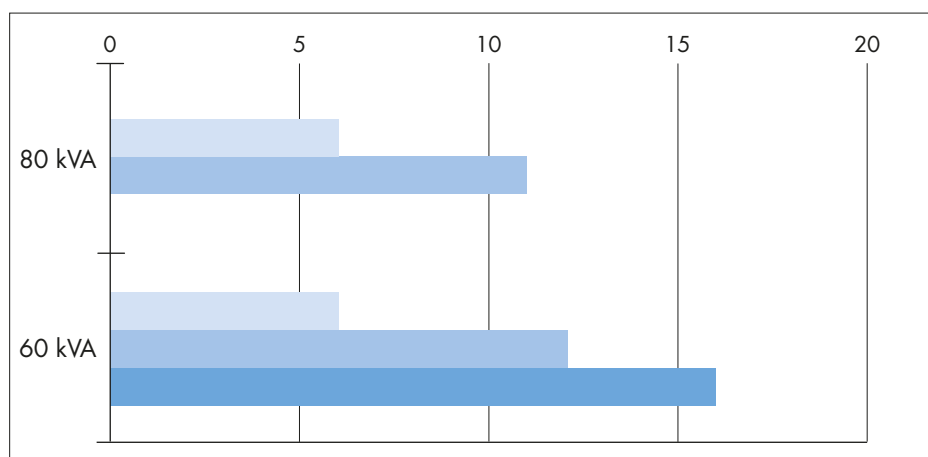
- Green Conversion technology, high efficiency even at light load and the lowest TCO in its category.
- Ultra High Efficiency mode, the ultimate innovation protecting high immunity grade applications, providing 99% efficiency and lowest operational expenditure.
- Full rated output power, ensuring optimal UPS sizing and utilization.
- Transformer free design for compact, light and sustainable systems.
- Full IGBT technology and electronic PFC, ensuring 0.99 input PF and THDi<3% for maximum upstream sources compatibility.
- Internal battery configurations up to 80 kVA for less floor space and maximum flexibility
- Dynamic Charging Mode (DCM) for maximum versatility in long autonomy and low charging time applications.
- Intermittent battery charge, with adjustable cycle (27-3 standard cycle) providing capital expenditure protection and extreme efficiency savings.
- Common battery management for even more compact and cost saving UPS systems
- Load based unit shutdown for highest efficiency in light loaded parallel systems.
- Comprehensive set of communication options for total remote monitoring of equipment operation.
- Fully compliance with all international product standards for maximum quality guarantee.

Main options

- Isolation transformer.
- Transformers/autotransformers for voltage adjustment.
- Battery voltage temperature compensation.
- External maintenance bypass wall-mounted box.
- Battery fuse switch wall-mounted box.
- Associated battery cabinets for long autonomy times.
- Parallel kit for load sharing.
- Load-sync for single UPS units.
- Load-sync box for two set of paralleled UPS.
- Local tripping device for bypass disconnecter.
- Tripping coil for bypass disconnecter for complete upstream protection and operator's safety without additional installation cost.
- Touch screen display.



Autonomy time in minutes with different types of internal batteries



INGENIO PLUS technical data

| Rating (kVA) | 60 | 80 | 100 | 125 | 160 |
|---|---|-----|--|-----|-----|
| Nominal power (kW) | 60 | 80 | 100 | 125 | 160 |
| UPS dimensions WxDxH (mm) | 560x940x1800 | | | | |
| UPS weight (kg) | 250 | 300 | 320 | 360 | 380 |
| UPS weight with int. battery (kg) | 800 | 850 | - | - | - |
| Battery configuration | Internal or external, 360÷372 cells, VRLA (other options) | | External 360÷372 cells, VRLA (other options) | | |
| Max autonomy with int. battery 70% load (min) | 16 | 11 | - | - | - |

Input

| | |
|---------------------------|---|
| Connection type | Hardwired 4w (rectifier), 4w (bypass) |
| Nominal voltage | 400 Vac 3-phase with neutral (rectifier) 380/400/415 Vac 3-phase with neutral (bypass) |
| Voltage tolerance | -20%, +15% (rectifier) ±10% (bypass) |
| Frequency and range | 50/60 Hz, 45÷65 Hz |
| Power factor | >0.99 |
| Current distortion (THDi) | <3% |

Output

| | |
|--------------------------------------|--|
| Connection type | Hardwired 4w |
| Nominal voltage | 380/400/415 Vac 3-phase with neutral |
| Frequency | 50/60 Hz |
| Voltage regulation | ±1% static; dynamic: IEC/EN 62040-3 Class 1 |
| Power factor | up to 1, without power derating |
| Overload capacity | Inverter: 101÷125% for 10 min, 126÷150% for 30 s, >150% for 0.1 s; bypass: 150% continuous, 1000% for 1 cycle |
| Efficiency (AC/AC)* | up to 99% |
| Classification as per IEC/EN 62040-3 | VFI-SS-111 |

Connectivity and function extensions

| | |
|-----------------------------|--|
| Front panel | Graphic display, mimic LED panel and keyboard, local EPO |
| Remote communication | Included: serial RS232 and USB, backfeed protection monitoring contact, input terminal block (remote emergency power off, battery circuit breaker aux. cont., external maintenance bypass circuit breaker aux. cont., diesel mode aux. cont.). Optional: SNMP adapter (Ethernet), Web interface (Ethernet), from ModBus-RTU to PROFIBUS DP adapter. SPDT contact relay board; remote system monitoring panel; UPS managing and server shutdown software |
| Optional function extension | Isolation transformer; transformers/autotransformers for voltage adjustment; external maintenance bypass; custom battery cabinets; wall-mounted battery fuse battery thermal probe; parallel kit, load-sync for single UPS and load-sync box (2 UPS systems) |

System

| | |
|---------------------|--|
| Protection degree | IP20 |
| Colour | RAL 9005 |
| Installation layout | Wall and side by side installation allowed, 80 cm clearance on one side only with internal battery |
| Accessibility | Front access, side access (only with internal battery), bottom cable entry |

*according to IEC/EN 62040-3

Other features

Environmental

| | |
|-----------------------------|---|
| Operating temperature range | 0°C ÷ +40°C |
| Storage temperature range | -10°C ÷ +70°C |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m |
| Audible noise at 1 m (dBA) | <60 |

Standards and certifications

| | |
|---|--|
| Quality assurance, environment, health and safety | ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007 |
| Safety | IEC/EN 62040-1 |
| EMC | IEC/EN 62040-2 |
| Environmental aspects | IEC/EN 62040-4 |
| Test and performance | IEC/EN 62040-3 |
| Protection degree | IEC 60529 |
| Marking | CE |

INGENIO PLUS 60-160 kVA series options

| | Description | When do I use it |
|--|--|--|
| | Parallel kit | When the unit is to be paralleled for load sharing |
| | Load-sync for single units | To synchronize single units' output for no-break load transfers by downstream static transfer switches |
| | Load-sync box for two sets of paralleled UPS | To synchronize the output of two paralleled UPS systems for no-break load transfers by downstream static transfer switches |
| | Tripping coil for bypass disconnecter | To be fully protected against backfeed energy upon static bypass failure. Detection circuit is included |
| | Input transformer (to be installed internally or in extended cabinet) | To galvanically isolate UPS from load or to change system's earth arrangement |
| | Battery fused switch box | To disconnect and protect an external battery pack (wall mounted box) |
| | Internal battery temperature probe | When the unit has internal batteries, for charging voltage compensation with temperature |
| | Internal battery + UPS temperature probe | When the unit has internal batteries, for charging voltage compensation with temperature and UPS temperature monitoring |
| | External battery temperature probe | When the unit has external batteries, for charging voltage compensation with temperature (10 m cable length) |
| | Dry contact relay card | To send UPS status to PLC's, SCADA's or AS400's by voltage free SPDT contacts |
| | Remote monitoring panel | To monitor UPS status by a LED panel from a remote control room |
| | RS485 ModBus-RTU port | To send UPS status to BMS's by RS485 connection and ModBus-RTU protocol. For telemonitoring and teleservice |
| | Web/SNMP Adapter | To send UPS status to BMS's by Ethernet connection and SNMP or ModBus over IP protocol. To monitor UPS status by any internet browser from workstations. To receive SMS or e-mail alerts from the UPS on any portable device |
| | Input terminal block for remote EPO | When the Emergency Power Off (EPO) has to be commanded by a remote control button |
| | Input terminal block for external manual bypass switch auxiliary contact | When there is an external maintenance bypass switch, for state monitoring |
| | Input terminal block for external battery switch auxiliary contact | When there is an external battery switch, for state monitoring |
| | Input terminal block for diesel mode contact | When battery recharge has to be inhibited over genset operation |

INCLUDED

B9000FXS
60-300 kVA
For medium data centers
Process automation
Medical equipment
Emergency and
safety systems



B9000FXS
Three phase
On-line double conversion
Full IGBT technology
Paralleling up to 1.8 MVA

BORRI

B9000FXS 60-300 kVA

For medium data centers
Process automation
Medical equipment
Emergency and safety systems



Features and benefits

- High double conversion efficiency and ECO mode for low running costs and environmental impact.
- Front access to all critical components for easy maintenance.
- Built-in inverter transformer for DC/AC galvanic protection of industrial type loads.
- Hot connection/disconnection of parallel units for easy system resizing.
- Full IGBT technology and electronic PFC, ensuring 0.99 input PF and THDi<3% for maximum upstream sources compatibility.
- Accurate battery management providing ripple current minimization charge current/voltage control as per batteries manufacturers' specifications and automatic/manual battery test for maximum battery expected life preservation.
- Dynamic Charging Mode (DCM) for maximum versatility in long autonomy and low charging time applications.
- Smart parallel management in load sharing, load synchronization of single UPS systems and load synchronization of two paralleled systems for optimum protection.
- Dual DSP plus microcontroller logics for top performance and reliability.
- CAN-bus based distributed parallel control ensuring high load sharing accuracy and no single point of failure in parallel systems.
- Comprehensive set of communication options for total remote monitoring of equipment operation.
- Fully compliance with all international product standards for maximum quality guarantee.

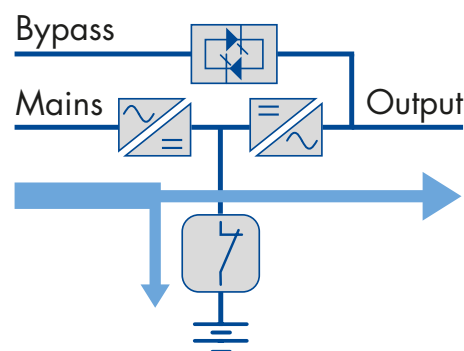
Main options

- Backfeed protection bypass contactor.
- Bypass isolation transformer.
- Transformers/autotransformers for voltage adjustment.
- Battery voltage temperature compensation.
- External maintenance bypass wall-mounted box.
- Battery fuse switch wall-mounted box.
- Associated battery cabinets for long autonomy times.
- Parallel kit for load sharing.
- Load-sync for single UPS units.
- Load-sync box for two set of paralleled UPS.
- Top cable entry.



Dynamic Charging Mode (DCM)

The battery charging current can be set above the nominal, up to the DCM limit, in order to manage high capacity battery packs. The extra charging power is fed to the battery, as long as the load does not requires it. This is a firmware enabled feature.



B9000FXS technical data

| Rating (kVA) | 60 | 80 | 100 | 125 | 160 | 200 | 250 | 300 |
|-----------------------|---|-----|-----|-------|-----|---------------|------|------|
| Nominal power (kW) | 54 | 72 | 90 | 112.5 | 144 | 180 | 225 | 270 |
| Dimensions WxDxH (mm) | 815x825x1670 | | | | | 1200x860x1900 | | |
| UPS weight (kg) | 570 | 600 | 625 | 660 | 715 | 970 | 1090 | 1170 |
| Battery configuration | External, 300÷312 cells, VRLA (other options) | | | | | | | |

Input

| | |
|---------------------------|--|
| Connection type | Hardwired 3w (rectifier), 4w (bypass) |
| Nominal voltage | 400 Vac 3-phase (rectifier) 380/400/415 Vac 3-phase with neutral (bypass) |
| Voltage tolerance | -20%, +15% |
| Frequency and range | 50/60 Hz, 45÷65 Hz |
| Power factor | 0.99 |
| Current distortion (THDi) | <3% |

Output

| | |
|--------------------------------------|---|
| Connection type | Hardwired 4w |
| Nominal voltage | 380/400/415 Vac 3-phase with neutral |
| Frequency | 50/60 Hz |
| Voltage regulation | ±1% static; dynamic: IEC/EN 62040-3 Class 1 |
| Power factor | up to 0.9, lagging or leading without power derating |
| Overload capacity | Inverter: 101÷125% for 10 min, 126÷150% for 1 min, 151÷199% for 10 s, 200% for 100 ms; bypass: 150% continuous, 1000% for 1 cycle |
| Efficiency (AC/AC)* | up to 98% |
| Classification as per IEC/EN 62040-3 | VFI-SS-111 |

Connectivity and function extensions

| | |
|------------------------------|---|
| Front panel | Graphic display, mimic LED panel and keyboard, local EPO |
| Remote communication | Included: serial RS232 and USB; input terminal block for: remote emergency power off (REPO), battery circuit breaker aux. cont., external maintenance bypass circuit breaker aux. cont., diesel mode aux. contact. Optional: SNMP adapter (Ethernet), Web interface (Ethernet), ModBus-TCP/IP (Ethernet); ModBus-RTU (RS485); ModBus-RTU to PROFIBUS DP adapter; SPDT contact relay board; remote system monitoring panel; UPS managing and server shutdown software |
| Optional function extensions | Isolation transformer; transformers/autotransformers for voltage adjustment; external maintenance bypass; custom battery cabinets; wall-mounted battery fuse switch box; battery thermal probe; parallel kit, top cable entry; load-sync for single UPS and load-sync box (2 UPS systems); backfeed protection |

System

| | |
|---------------------|--|
| Protection degree | IP 20 (other options) |
| Colour | RAL 7016 (other options) |
| Installation layout | Wall, back to back and side by side installation allowed |
| Accessibility | Front and top access, bottom cable entry |

*certified by TÜV NORD according to IEC/EN 62040-3

Other features

Environmental

| | |
|-----------------------------|---|
| Operating temperature range | 0°C ÷ +40°C |
| Storage temperature range | -10°C ÷ +70°C |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m |
| Audible noise at 1m (dBA) | <62 |

Standards and certifications

| | |
|---|--|
| Quality assurance, environment, health and safety | ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007 |
| Safety | IEC/EN 62040-1 |
| EMC | IEC/EN 62040-2 |
| Environmental aspects | IEC/EN 62040-4 |
| Test and performance | IEC/EN 62040-3 (VFI-SS-111) |
| Protection degree | IEC 60529 |
| Marking | CE |

B9000FXS series options

| | Description | When do I use it |
|--|--|--|
| | Parallel kit | When the unit is to be paralleled for load sharing |
| | Load-sync for single units | To synchronize single units' output for no-break load transfers by downstream static transfer switches |
| | Load-sync box for two sets of paralleled UPS | To synchronize the output of two paralleled UPS systems for no-break load transfers by downstream static transfer switches |
| | Backfeed protection bypass contactor | To be fully protected against backfeed energy upon static bypass failure |
| | Top cable entry (in extended cabinet) | To allow input and output cable entry from the top of the unit |
| | Bypass isolation transformer (in extended cabinet) | To galvanically isolate UPS from load or to change system's earth arrangement |
| | Battery fused switch box | To disconnect and protect an external battery pack (wall mounted box) |
| | Battery temperature probe | For charging voltage compensation with temperature (10 m cable length) |
| | Dry contact relay card | To send UPS status to PLC's, SCADA's or AS400's by voltage free SPDT contacts |
| | Remote monitoring panel | To monitor UPS status by a LED panel from a remote control room |
| | RS485 ModBus-RTU port | To send UPS status to BMS's by RS485 connection and ModBus-RTU protocol. For telemonitoring and teleservice |
| | Web/SNMP Adapter | To send UPS status to BMS's by Ethernet connection and SNMP or ModBus over IP protocol. To monitor UPS status by any internet browser from workstations. To receive SMS or e-mail alerts from the UPS on any portable device |
| | Input terminal block for remote EPO | When the Emergency Power Off (EPO) has to be commanded by a remote control button |
| | Input terminal block for external manual bypass switch auxiliary contact | When there is an external maintenance bypass switch, for state monitoring |
| | Input terminal block for external battery switch auxiliary contact | When there is an external battery switch, for state monitoring |
| | Input terminal block for diesel mode contact | When battery recharge has to be inhibited over genset operation |

INCLUDED

B9600FXS
400-800 kVA
For data centers
Process industry
Infrastructure



B9600FXS
400 to 800 kVA
Three phase On-line double
conversion Full IGBT technology
Paralleling up to 4.8 MVA

BORRI

B9600FXS

400-800 kVA

For data centers
Process industry
Infrastructure



Features and benefits

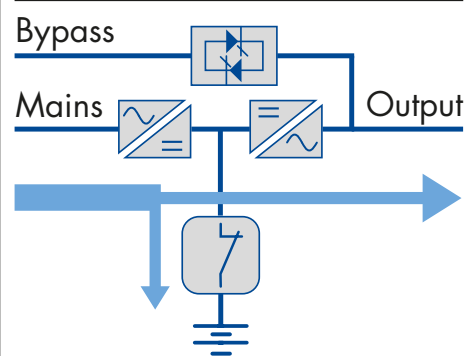
- High double conversion efficiency and ECO mode for low running costs and environmental impact.
- Front access to all critical components for easy maintenance.
- Built-in inverter transformer for DC/AC galvanic protection of industrial type loads.
- Included backfeed bypass contactor for complete protection and operators' safety without additional installation costs.
- Hot connection/disconnection of parallel units for easy system resizing.
- Full IGBT technology and electronic PFC, ensuring 0.99 input PF and THDi<3% for maximum upstream sources compatibility.
- Accurate battery management providing ripple current minimization charge current/voltage control as per batteries manufacturers' specifications and automatic/manual battery test for maximum battery expected life preservation.
- Dynamic Charging Mode (DCM) for maximum versatility in long autonomy and low charging time applications.
- Smart parallel management in load sharing, load synchronization of single UPS systems and load synchronization of two paralleled systems for optimum protection.
- Dual DSP plus microcontroller logics for top performance and reliability.
- CAN-bus based distributed parallel control ensuring high load sharing accuracy and no single point of failure in parallel systems.
- Comprehensive set of communication options for total remote monitoring of equipment operation.
- Fully compliance with all international product standards for maximum quality guarantee.

Main options

- Manual bypass in extended cabinet
- Backfeed protection
- Bypass isolation transformer.
- Transformers/autotransformers for voltage adjustment.
- Battery voltage temperature compensation.
- External maintenance bypass wall-mounted box.
- Battery fuse switch wall-mounted box.
- Associated battery cabinets for long autonomy times.
- Parallel kit for load sharing.
- Load-sync for single UPS units.
- Load-sync box for two set of paralleled UPS.
- Top cable entry.

Dynamic Charging Mode (DCM)

The battery charging current can be set above the nominal, up to the DCM limit, in order to manage high capacity battery packs. The extra charging power is fed to the battery, as long as the load does not requires it. This is a firmware enabled feature.



B9600FXS technical data

| Rating (kVA) | 400 | 500 | 600 | 800 |
|-----------------------|---|---------------|---------------|---------------|
| Nominal power (kW) | 360 | 450 | 540 | 720 |
| Dimensions WxHxD (mm) | 1990x990x1920 | 2440x990x2020 | 2440x990x2020 | 3640x990x1920 |
| UPS weight (kg) | 1820 | 2220 | 2400 | 3600 |
| Battery configuration | External, 300±312 cells, VRLA (other options) | | | |

Input

| | |
|---------------------------|--|
| Connection type | Hardwired 3w (rectifier), 4w (bypass) |
| Nominal voltage | 400 Vac 3-phase (rectifier) 380/400/415 Vac 3-phase with neutral (bypass) |
| Voltage tolerance | -20%, +15% |
| Frequency and range | 50/60 Hz, 45÷65 Hz |
| Power factor | 0.99 |
| Current distortion (THDi) | <3% |

Output

| | |
|--------------------------------------|--|
| Connection type | Hardwired 4w |
| Nominal voltage | 380/400/415 Vac 3-phase with neutral |
| Frequency | 50/60 Hz |
| Voltage regulation | ±1% static; dynamic: IEC/EN 62040-3 Class 1 |
| Power factor | up to 0.9, lagging or leading without power derating |
| Overload capacity | Inverter: 101÷125% for 10 min, 126÷150% for 1 min, 151÷199% for 10 s, 200% for 100 ms; bypass: 150% continuous, 1000% for 1 cycle |
| Efficiency (AC/AC)* | up to 98% |
| Classification as per IEC/EN 62040-3 | VFI-SS-111 |

Connectivity and function extensions

| | |
|------------------------------|---|
| Front panel | Graphic display, mimic LED panel and keyboard, local EPO |
| Remote communication | Included: serial RS232 and USB; input terminal block for: remote emergency power off (REPO), battery circuit breaker aux. cont., external maintenance bypass circuit breaker aux. cont., diesel mode aux. contact. Optional: SNMP adapter (Ethernet), Web interface (Ethernet), ModBus-TCP/IP (Ethernet); ModBus-RTU (RS485); ModBus-RTU to PROFIBUS DP adapter; SPDT contact relay board; remote system monitoring panel; UPS managing and server shutdown software |
| Optional function extensions | Isolation transformer; transformers/autotransformers for voltage adjustment; external maintenance bypass; custom battery cabinets; wall-mounted battery fuse switch box; battery thermal probe; parallel kit; top cable entry; load-sync for single UPS and load-sync box (2 UPS systems) |

System

| | |
|---------------------|--|
| Protection degree | IP 20 (other options) |
| Colour | RAL 7016 (other options) |
| Installation layout | Wall, back to back and side by side installation allowed |
| Accessibility | Front and top access, bottom cable entry |

*certified by TÜV NORD according to IEC/EN 62040-3

Other features

Environmental

| | |
|-----------------------------|---|
| Operating temperature range | 0°C ÷ +40°C |
| Storage temperature range | -10°C ÷ +70°C |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m |
| Audible noise at 1m (dBA) | <62 |

Standards and certifications

| | |
|---|--|
| Quality assurance, environment, health and safety | ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007 |
| Safety | IEC/EN 62040-1 |
| EMC | IEC/EN 62040-2 |
| Environmental aspects | IEC/EN 62040-4 |
| Test and performance | IEC/EN 62040-3 |
| Protection degree | IEC 60529 |
| Marking | CE |

B9600FXS series options

| | Description | When do I use it |
|--|---|--|
| | Parallel kit | When the unit is to be paralleled for load sharing |
| | Load-sync for single units | To synchronize single units' output for no-break load transfers by downstream static transfer switches |
| | Load-sync box for two sets of paralleled UPS | To synchronize the output of two paralleled UPS systems for no-break load transfers by downstream static transfer switches |
| | Backfeed protection bypass contactor | To be fully protected against backfeed energy upon static bypass failure |
| | Top cable entry (in extended cabinet) Maintenance bypass (in extended cabinet) | To allow input and output cable entry from the top of the unit. B9600FXS series feature optional maintenance bypass for cost reduction when this is externally provided |
| | Bypass isolation transformer (in extended cabinet) | To galvanically isolate UPS from load or to change system's earth arrangement |
| | Battery fused switch box | To disconnect and protect an external battery pack (wall mounted box) |
| | Battery temperature probe | For charging voltage compensation with temperature (10 m cable length)) |
| | Dry contact relay card | To send UPS status to PLC's, SCADA's or AS400's by voltage free SPDT contacts |
| | Remote monitoring panel | To monitor UPS status by a LED panel from a remote control room |
| | RS485 ModBus-RTU port | To send UPS status to BMS's by RS485 connection and ModBus-RTU protocol. For telemonitoring and teleservice |
| | Web/SNMP Adapter | To send UPS status to BMS's by Ethernet connection and SNMP or ModBus over IP protocol. To monitor UPS status by any internet browser from workstations. To receive SMS or e-mail alerts from the UPS on any portable device |
| | Input terminal block for remote EPO | When the Emergency Power Off (EPO) has to be commanded by a remote control button |
| | Input terminal block for external manual bypass switch auxiliary contact | When there is an external maintenance bypass switch, for state monitoring |
| | Input terminal block for external battery switch auxiliary contact | When there is an external battery switch, for state monitoring |
| | Input terminal block for diesel mode contact | When battery recharge has to be inhibited over genset operation |

INCLUDED

UPSAVER
100 kW-12.8 MW
4.0 UPS dedicated
to ICT for unmatched
energy savings



UPSaver
100 kW to 12.8 MW
Modular three phase

Complete brochure
available

UPSAVER

100 kW-12.8 MW

4.0 UPS dedicated to ICT for unmatched energy savings



Features and benefits

- Both modular and stand alone for extreme versatility.
- Patented Green Conversion providing high efficiency and battery care technology for continuous savings on operating and maintenance expenditure.
- Four operating modes providing best efficiency in all conditions: DHE double conversion 96% efficiency, VHE active filtering 97%, ECO mode 98%, UHE highest efficiency 99.5%.
- Four modularity levels for maximum flexibility and quick maintenance.
- I/O unit specific design providing real hot expandability and maintainability, with no downtime and no bypass operation.
- Load based module shutdown for highest efficiency at light load.
- Included telemonitoring for total control over system operation.
- Minimum TCO (Total Cost of Ownership) and best PUE (Power Usage Effectiveness) for low environmental footprint data centers.

Main options

- Centralized static bypass for UPSaver GPU (Growing Power Unit).
- Modular battery for UPSaver GPU.
- Transformers/autotransformers for isolation or voltage adjustment.
- Battery voltage temperature compensation.
- Associated battery cabinets for long autonomy times.
- Parallel kit for load sharing.
- Load-sync for single UPS units.
- Load-sync box for two set of paralleled UPS.
- Tripping coil for bypass disconnecter for UPSaver FPU (Fixed Power Unit).
- Touch screen display for UPSaver FPU.



Connectivity and function extensions

| | |
|------------------------------|--|
| Front panel | Touch screen display for UPSaver GPU, LCD display (optional touch screen display) for UPSaver FPU |
| Remote communication | Included: serial RS232 and USB; input terminal block for remote emergency power off (REPO), battery circuit breaker aux. cont., external maintenance bypass circuit breaker aux. cont. Optional: input terminal block for diesel mode aux. cont., ModBus-TCP/IP (Ethernet); ModBus-RTU (RS485); ModBus-RTU to PROFIBUS DP adapter; SPDT contact relay board |
| Optional function extensions | Isolation transformer, custom battery cabinets, wall-mounted battery fuse switch box, battery thermal probe parallel kit, load-sync for single UPS and load-sync box (2 UPS systems), tripping coil for bypass disconnecter for UPSaver FPU |

UPSAVER technical data

| Input | |
|---|---|
| Connection type | Hardwired 4w (rectifier), 4w (bypass) |
| Nominal voltage | 400 Vac 3-phase with neutral (rectifier), 380/400/415 Vac 3-phase with neutral (bypass) |
| Voltage tolerance | -20%, +15% (rectifier), ±10% (bypass) |
| Frequency and range | 50/60 Hz, 45÷65 Hz |
| Power factor | 0.99 |
| Current distortion (THDi) | <3% |
| Output | |
| Connection type | Hardwired 4w |
| Nominal voltage | 380/400/415 Vac 3-phase with neutral |
| Frequency | 50/60 Hz |
| Voltage regulation (VFI) | ±1% static; dynamic: IEC/EN 62040-3 Class 1 |
| Power factor | Any power factor (leading or lagging) up to 1, without power derating |
| Overload capability | Inverter: 101÷125% for 10 min; 126÷150% for 1 min; bypass: 150% continuous, 1000% for 1 cycle |
| AC/AC efficiency certified by TÜV | Up to 99.5% |
| Classification as per IEC/EN 62040-3 | VFI-SS-111 |
| Environmental | |
| Operating temperature | 0°C ÷ +40°C |
| Storage temperature | -10°C ÷ +70°C |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m |
| Audible noise at 1m (dBA) | <50 (UHE) |
| System | |
| Protection degree | IP 20 |
| Colour | RAL 9005 |
| Installation layout | Wall, back to back and side by side installation allowed |
| Accessibility | Front and top access, bottom and top cable entry |
| Parallel configuration | Up to 8 UPS, for a total of 12.8 MW |
| Standards and certifications | |
| Quality assurance, environment, health and safety | ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007 |
| Safety | IEC/EN 62040-1 |
| EMC | IEC/EN 62040-2 |
| Test and performance | IEC/EN 62040-3 |
| Protection degree | IEC 60529 |
| Marking | CE |

UPSAVER stand alone units FPU (Fixed Power Unit) *

| Rating | 100 | 200 |
|---------------------------|--------------|--------------|
| Nominal power (kW) | 100 | 200 |
| UPS dimensions WxDxH (mm) | 460x920x1690 | 800x950x2100 |
| UPS weight (kg) | 360 | 720 |

* A Fixed Power Unit (FPU) is made of a 100 kW or 200 kW Basic Power Unit (BPU) plus all circuit breakers and control logics for use in stand alone configuration

UPSAVER 100 modular units GPU (Growing Power Unit) ♦

| Rating | 200 | 300 | 400 | 500 | 600 |
|---------------------------|---------------|---------------|---------------|---------------|---------------|
| N nominal power (kW) | 200 | 300 | 400 | 500 | 600 |
| N+1 nominal power (kW) | 100 | 200 | 300 | 400 | 500 |
| UPS dimensions WxDxH (mm) | 1420x920x1690 | 1880x920x1690 | 2340x920x1690 | 2800x920x1690 | 3260x920x1690 |
| UPS weight (kg) | 800 | 1150 | 1500 | 1850 | 2200 |

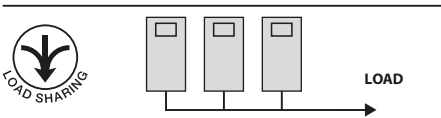
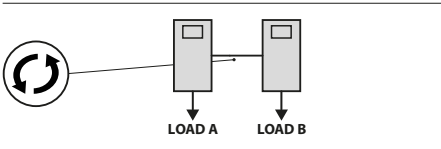
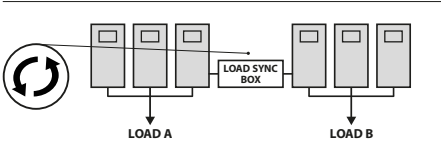
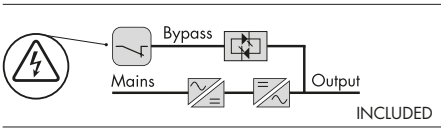
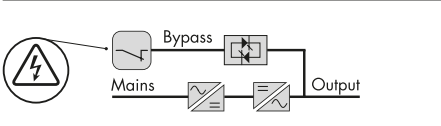
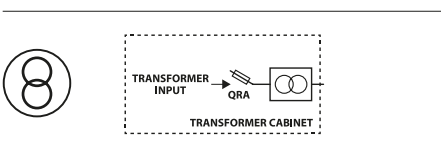
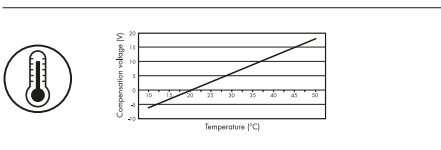





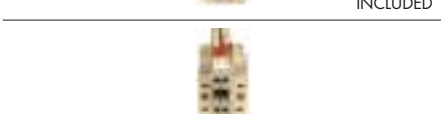

♦ A 100 kW Growing Power Unit (GPU) is made of many 100 kW Basic Power Units (BPU) plus an I/O module including all circuit breakers and control logics required for use in modular configuration

UPSAVER 200 modular units GPU (Growing Power Unit) ♦

| Rating | 400 | 600 | 800 | 1000 | 1200 | 1400 | 1600 |
|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| N nominal power (kW) | 400 | 600 | 800 | 1000 | 1200 | 1400 | 1600 |
| N+1 nominal power (kW) | 200 | 400 | 600 | 800 | 1000 | 1200 | 1400 |
| UPS dimensions WxDxH (mm) | 2350x970x2100 | 2950x970x2100 | 3900x970x2100 | 4500x970x2100 | 5100x970x2100 | 6800x970x2100 | 7400x970x2100 |
| UPS weight (kg) | 1660 | 2260 | 2920 | 3590 | 4190 | 4960 | 5560 |

♦ A 200 kW Growing Power Unit (GPU) is made of many 200 kW Basic Power Units (BPU) plus a I/O module including all circuit breakers and control logics required for use in modular configuration

UPSAVER series options

| | Description | When do I use it |
|--|--|--|
|  | Parallel kit | When the unit is to be paralleled for load sharing |
|  | Load-sync for single units | To synchronize single units' output for no-break load transfers by downstream static transfer switches |
|  | Load-sync box for two sets of paralleled UPS | To synchronize the output of two paralleled UPS systems for no-break load transfers by downstream static transfer switches |
|  | Backfeed protection bypass contactor for UPSaver GPU | To be fully protected against backfeed energy upon static bypass failure |
|  | Tripping coil for bypass disconnecter for UPSaver FPU | To be fully protected against backfeed energy upon static bypass failure. Detection circuit is included |
|  | Isolation transformer | To galvanically isolate UPS from load or to change system's earthing arrangement |
|  | Battery temperature probe | For charging voltage compensation with temperature (10 m cable length) |
|  | Touch screen display (Included in UPSaver GPU) | To access UPS information, measure, alarms and control menu by touch screen advanced graphic user interface. To send UPS status by Ethernet connection and ModBus over IP protocol. To add teleservice and telemonitoring features |
|  | Dry contact relay card INCLUDED | To send UPS status to PLC's, SCADA's or AS400's by voltage free SPDT contacts |
|  | RS485 ModBus-RTU port INCLUDED | To send UPS status to BMS's by RS485 connection and ModBus-RTU protocol. For telemonitoring and teleservice |
|  | Input terminal block for remote EPO INCLUDED | When the Emergency Power Off (EPO) has to be commanded by a remote control button |
|  | Input terminal block for external manual bypass switch auxiliary contact INCLUDED | When there is an external maintenance bypass switch, for state monitoring |
|  | Input terminal block for external battery switch auxiliary contact INCLUDED | When there is an external battery switch, for state monitoring |
|  | Input terminal block for diesel mode contact | When battery recharge has to be inhibited over genset operation |

Three phase UPS TELESERVICE

Borri teleservice

When total availability is an asset, robust site design must be supported by a comprehensive monitoring system providing continuous UPS data collection, in order to detect any deviation from optimum operation and trigger proper and immediate response, so that anomalies don't evolve into issues.

Downtime is usually the last event of a chain and that's why early deviation detection and control is the key to perfect operation of critical equipment over time.

Borri is fulfilling those needs delivering its UPS telemonitoring and teleservice, 365 days a year. The Headquarter based control room collects real-time UPS information, allowing early corrective action upon anomalies. In case of a critical event, Borri's remote service engineers get an emergency report for issue severity assessment. They perform a first analysis to determine proper solutions, leading to identification and resolution of all possible operating issues. If needed a local service technician will be dispatched to carry out an on-site visit.

Any Borri equipment featuring a network or ModBus card can be remotely monitored. Status and events, are periodically sent to our service engineers providing status reports and data collection for log

term analysis. Activation of any critical warnings is immediately sent, as well, allowing early corrective action implementation.

The system is fully configurable: IT network integration and data transmission security policy, access levels to information and critical parameters to be monitored can be set according to site peculiarities, so as to always get the best balance between monitoring needs and site safety. Real time alarm notification to appointed emergency staff can be configured, as well, by e-mail, SMS, or other.

Features and benefits

- Advanced predictive maintenance, reducing operational expenditure, staffing and on-site spare parts need.
- Early anomaly detection, ensuring 100% availability of critical applications.
- 24/7 monitoring of UPS health status, improving system's reliability and operating life.
- Time compression between anomaly occurrence and recovery, dramatically reducing MTTR.
- Easy integration with facility IT-networks and total control over configuration, allowing for safe data exchange in high security grade applications.

24/7 SERVICE



STS100/STS300 25-3000 A Static Transfer Switches

Features and benefits

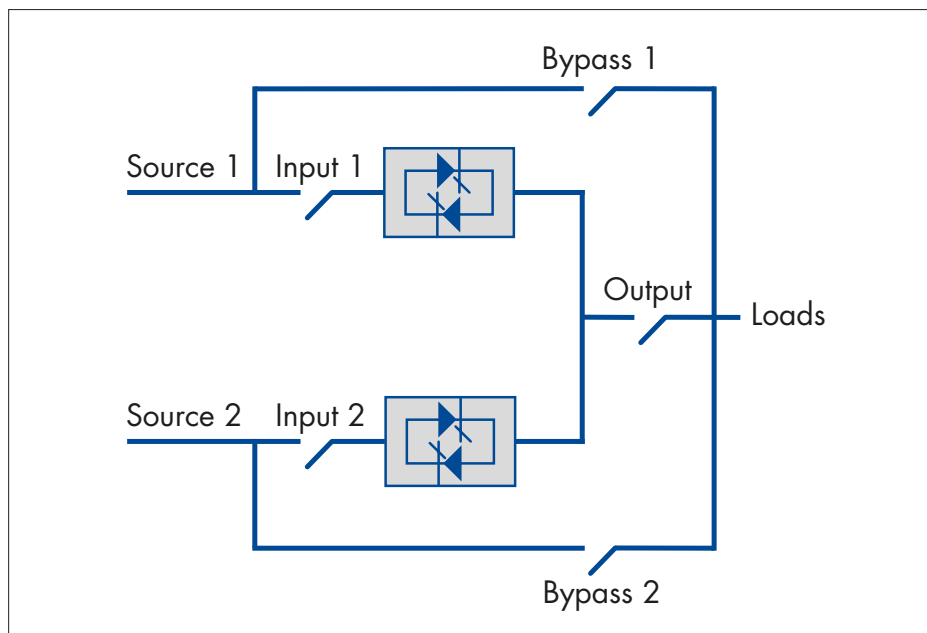
- Continuous monitoring of voltage and frequency and automatic instant (<4ms) transfers for secure power switching without cross connection between sources.
- Short circuit transfer inhibit for robust load protection.
- SCR fault detection and backfeed protection for maximum upstream safety.
- Dual manual bypass for complete source independence during maintenance.
- True oversized neutral (2x In) redundant cooling with monitored fans and redundant (3x3) internal power supply in all system control boards for top product reliability in high availability applications.
- Full front access for easy maintenance.
- Bottom and top cable entry for maximum installation versatility.
- Comprehensive set of communication options for total remote monitoring of equipment operation.
- Fully compliance with all international product standards for maximum quality guarantee.



Main options

- Isolation transformer.
- Plug-in breakers.
- Output distribution panels.
- Panel builder version.
- Additional SPDT contact relay board.
- 2-pole configuration (STS 100) or 4 pole configuration (STS 300).
- Operation without neutral (STS300).



STS block diagram



| | Description | When do I use it |
|---|------------------------|--|
|  INCLUDED | Dry contact relay card | To send UPS status to PLC's, SCADA's or AS400's by voltage free SPDT contacts |
|  | RS485 ModBus-RTU port | To send UPS status to BMS's by RS485 connection and ModBus-RTU protocol. For telemonitoring and teleservice |

STS100 / STS300 technical data

| Rating (A) | 25 | 50 | 80 | 100 | 100 | 250 | 400 | 630 | 800 |
|-----------------------|---|-----|-----|-----|---------------|-----|-----|---------------|-----|
| | STS100 | | | | STS300 | | | | |
| Dimensions WxHxD (mm) | 820x835x1475 (custom layout on request) | | | | 820x835x1475 | | | 1220x860x1900 | |
| Weight (kg) | 150 | 190 | 220 | 265 | 265 | 290 | 305 | 615 | 660 |

Input

| | | | | | | | | | |
|---------------------------------|--|--|--|--|--|--|--|--|--|
| Connection type | Hardwired 2w | | | | Hardwired 4w | | | | |
| Nominal voltage | 110/115/120/220/230/240/277 Vac 1-phase | | | | 208/380/400/415/440/480 Vac 3-phase with neutral | | | | |
| Voltage tolerance | ±10% (up to ±20% on request) | | | | | | | | |
| Frequency and range | 50/60 Hz, ±2 Hz (up to ±4 Hz on request) | | | | | | | | |
| Source harmonic voltage content | unlimited (>20% THD transfer time ≤10ms) | | | | | | | | |
| Transfer phase angle | 5° ÷ 30° | | | | | | | | |

Output

| | | | | | | | | | |
|--------------------------------|---|--|--|--|--|--|--|--|--|
| Connection type | Hardwired 2w | | | | Hardwired 4w | | | | |
| Nominal voltage | 110/115/120/220/230/240/277 Vac 1-phase | | | | 208/380/400/415/440/480 Vac 3-phase with neutral | | | | |
| Frequency | 50/60 Hz | | | | | | | | |
| Transfer time | ≤4 ms | | | | | | | | |
| Transfer mode | Break before make, transfer inhibit on fault | | | | | | | | |
| Load power factor | 1 to 0.3 | | | | | | | | |
| Maximum crest factor | 3:1 | | | | | | | | |
| THD current feedback from load | unlimited | | | | | | | | |
| Overload capacity | 125% for 30 min, 150% for 10 min, 200% for 30 s, 2000% for 1 cycle, 4000% for ½ cycle | | | | | | | | |
| Rendimento (AC/AC) | >99% | | | | | | | | |

Connectivity and function extensions

| | | |
|------------------------------|--|--|
| Front panel | Mimic LED panel and keyboard | Graphical LCD display, mimic LED panel and keyboard |
| Remote communication | Included: dry contact relay card. Optional: RS232 or RS485 serial port, additional dry contact relay board | Included: Dry contact relay card, RS232 and RS485 serial ports, ModBus-RTU protocol. Optional: additional dry contact relay card |
| Optional function extensions | 2-poles configuration; plug-in circuit breakers, operation without neutral, panel builder execution, output distribution panels, isolation transformer | 4-poles configuration, plug-in circuit breakers, operation without neutral, panel builder execution, output distribution panels, isolation transformer |

System

| | |
|---------------------|--|
| Protection degree | IP 20 (other options) |
| Colour | RAL 7035 (other options) |
| Installation layout | Wall, back to back and side by side installation allowed |
| Accessibility | Front access, bottom and top cable entry |

Other ratings on request

Other features

Environmental

| | |
|-----------------------------|---|
| Operating temperature range | 0°C ÷ +40°C |
| Storage temperature range | -10°C ÷ +70°C |
| Altitude (AMSL) | < 1000 m without power reduction, > 1000 with reduction of 0.5% per 100 m |
| Audible noise at 1 m (dBA) | <62 |

Standards and certifications

| | |
|---|--|
| Quality assurance, environment, health and safety | ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007 |
| Safety | IEC/EN 62310-1 |
| EMC | IEC/EN 62310-2 |
| Breakers | IEC/EN 60947-3 |
| Transfer voltage limits | IEEE Standard 446 |
| Protection degree | IEC 60529 |
| Performance | IEC/EN 62310-3 |
| Marking | CE |

