INGENIO MAXUPS

200 kVA

GREEN 3-L CONVERSION

www.borri.it

BORRI®

Low Total Cost of Ownership, high efficiency and compact solution for supplying reliable uninterrupted quality power to all critical applications in networking and medium to large data center, health, finance, industrial processing, building and transportation markets and for TLC. Featuring three level Green Conversion technology, INGENIO MAX provides highest efficiency and 100% expected battery life, ensuring reduced Capex and Opex.

INGENIO MAX UPS

Applications

- Networking and telecommunication
- Data servers
- Process automation
- Medical equipment
- Emergency and safety systems
- Continuous cooling

Features and benefits

- Continuous savings with three level Green Conversion technology, providing high efficiency and UPS components' life extension.
- Capital expenditure protection thanks to hot expandability and load based shutdown in parallel systems.
- Reduced commissioning and floor space, lower environmental footprint with transformer free design and common battery management.
- Clean mains and full compatibility with Genset operation due to low input current distortion and soft start.
- No extra costs for electrical infrastructure oversizing and power factor correction thanks to 0.99 input PF.
- High flexibility for all types of loads with full output power rating and different operating modes.

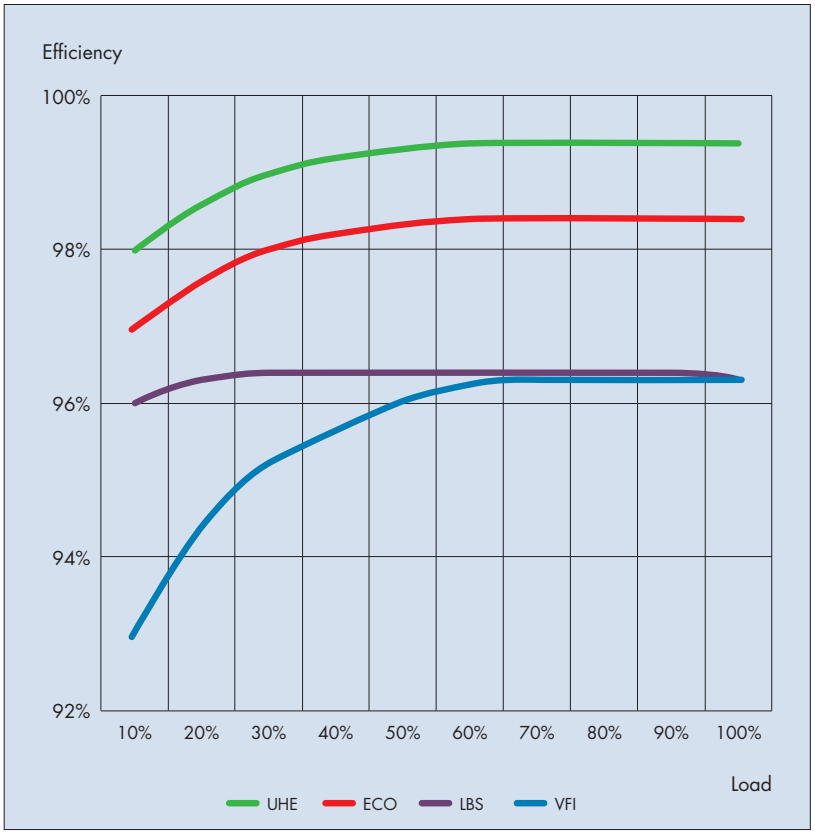
3-L Green Conversion

Three level Green Conversion is based on a patented control algorithm, managing the battery-inverter subsystem to enhance system efficiency and to extend battery life. The innovative 3-L Green Conversion boosts double conversion efficiency up to 97% from 25% system load, whilst reducing switching stress on all power components. This results in up to 33% energy savings with respect to an older generation UPS. The Green Conversion battery charger completely filters voltage ripple and floating voltage micro currents to the battery, which are the main causes of early battery ageing, providing up to 40% battery service life extension.

High efficiency operations

The UPS is capable of different modes of operation for any application according to mains quality and load immunity grade to mains disturbances so as to always deliver the best reliable quality power at the highest efficiency:

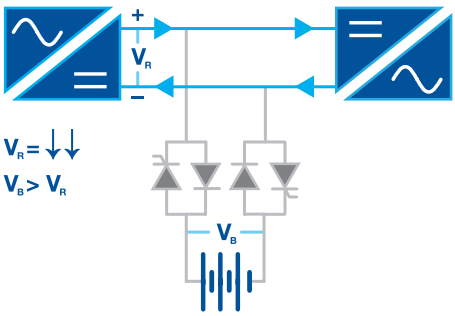
- on-line double conversion: VFI (Voltage Frequency Independent) double conversion total protection with up to 97% efficiency thanks to 3-L Green Conversion technology.
- ECO mode: suitable for stable mains, in VFD (Voltage Frequency Dependent) mode of operation, achieving more than 98% efficiency.
- Ultra High Efficiency (UHE): the most innovative power protection technology for high immunity grade applications, up to 99% efficiency, at the lowest Total Cost of Ownership.
- Load Based Shutdown (LBS): keep efficiency at best in parallel systems by suspending the unneeded units.

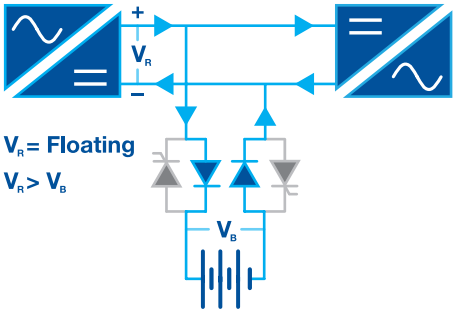


Battery life care

Preserving battery's health is a key to capital expenditure protection and full availability of mission critical applications. INGENIO MAX comes with advanced charging and battery managing features, allowing for the best battery performance and extended battery lifetime:

- Green Conversion Battery Care with adjustable cyclic charge (14-2 typical), providing 100% battery service life and maximum energy savings.
- Dynamic Charging Mode (DCM): automatic setting of battery charging current, with feeding priority to output loads, ensuring low charging times for long autonomy applications.
- Battery charging voltage temperature compensation to prevent excess battery charging and overheating.
- Automatic and manual battery test to detect any battery performance deterioration.
- Common battery management, the best option when the drivers are pricing and footprint.





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Who we are

Borri Group is a global provider of power electronics systems and solutions for harsh industrial and demanding commercial and ICT secure power requirements merging eighty years of experience in developing, manufacturing and supplying uninterruptable power systems and solutions.
Our Research and Development Team's expertise combines AC and DC power technologies and spanning the worlds of both conventional and renewable energy, to provide innovative solutions for tomorrows problems.
The company is comprised of three business units: Industrial Power, Commercial Power and Renewable Power, headquartered in Bibbiena, Italy.
Borri's latest products, based on its green conversion operation guarantee the best PUE for green data centers: proof of the ongoing company commitment to innovation.
Under the Astrid brand Borri offers systems for green renewable energy: a confirmation of Borri' s commitment to sustainability.
Thanks to its highly skilled custom engineers Borri controls in-house the entire process: from feed studies to design, production and after-sales service guaranteeing state-of-the-art solutions.
Based in Italy with over 15,000 m² production area and a large high power test field, Borri can depend on its more than 80 years of experience and multidisciplinary research and development to serve our customers best.

INGENIO MAX
200 kVA
For medium to large data centers
Process automation
Service industry

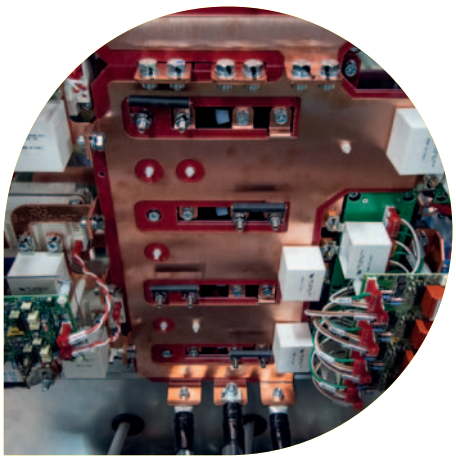
GREEN 3-L CONVERSION

BORRI

INGENIO MAX
200 kVA
Three phase
On-line double conversion
Transformer free
Full IGBT technology
Paralleling up to 1.2 MVA

INGENIO MAX 200 kVA

For medium to large data centers
Process automation
Service industry



Features and benefits

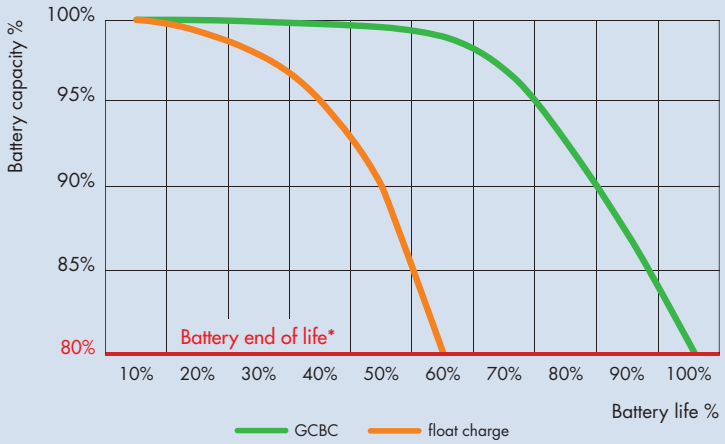
- Three level Green Conversion, up to 97% system efficiency, very low noise and the lowest TCO in its category.
- Ultra High Efficiency mode, the ultimate innovation protecting high immunity grade applications, providing 99% efficiency and lowest operational expenditure.
- Full rated output power (pf=1), 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.
- Dynamic Charging Mode (DCM) for maximum versatility in long autonomy and low charging time applications.
- Green Conversion Battery Care (GCBC), for extended battery service life.
- Comprehensive set of communication options for total remote monitoring of equipment operation.
- Fully compliant with international product standards for maximum quality guarantee.

Options

- Transformers/autotransformers for isolation or voltage adjustment.
- Battery voltage temperature compensation.
- External maintenance bypass wall-mounted box.
- Battery fuse switch wall-mounted box.
- Battery cabinets for long autonomy times.
- Parallel kit for load sharing, Load Based Shutdown (LBS) for parallel units.
- Load-sync for single UPS units, load-sync box for two sets of paralleled UPS.
- Common battery.
- Tripping coil for bypass disconnector.
- Other options on request.

GREEN 3-L CONVERSION

Green Conversion Battery Care vs conventional float charge enhanced battery service life



*as per IEC/EN 60896-21

INGENIO MAX technical data

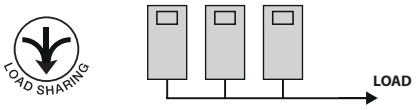
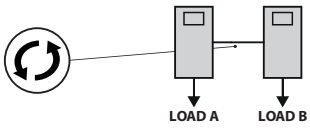
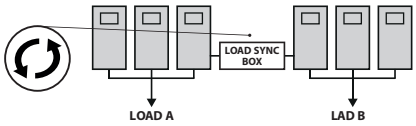
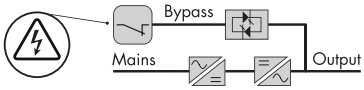
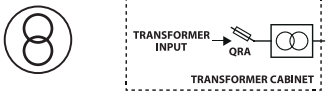
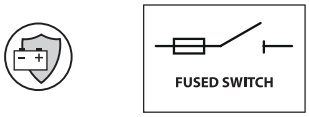
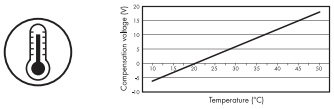
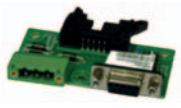
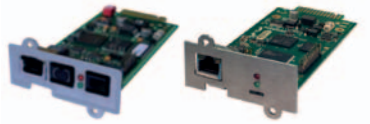
Rating (kVA)	**200**
Nominal power (kW)	**200**
UPS dimensions WxDxH (mm)	850x900x1975
UPS weight (kg)	720
Battery configuration	External 360÷372 cells, VRLA (other options)
Input	
Connection type	Hardwired 4w (rectifier), 4w (bypass)
Nominal voltage	400 Vac 3-phase with neutral (rectifier) 380/400/415 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	static: 1%; dynamic: as per IEC/EN 62040-3 Class 1
Power factor	up to 1, without power derating
Overload capacity	Inverter: 125% for 10 min, 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	10" colour touch screen display, 1024x600 pixels
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., external output circuit breaker aux. cont., remote transfer to bypass mode) 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 switch box battery thermal probe; parallel kit, load-sync for single UPS and load-sync box (2 UPS systems); other options on request
System	
Protection degree	IP20
Colour	RAL 9005
Installation layout	Wall, back to back and side by side installation allowed
Accessibility	Front 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 m 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 MAX 200 kVA 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 disconnector	To be fully protected against backfeed energy upon static bypass failure. Detection circuit is included
	Input transformer in extended cabinet	To galvanically isolate UPS from load or to change system's earth arrangement
	Battery fuse switch in wall mounted box	To disconnect and protect an external battery pack
	External 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 through 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

Included features

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
Input terminal block for external output circuit breaker	When there is an external output breaker, for status monitoring
Input terminal block for remote bypass transfer	When the transfer to bypass mode can be commanded by an external contact