

# INGENIO PLUS

## 3-PHASE UPS

from 30 to 160 kW



English







INGENIO PLUS BROCHURE

# YOUR CRITICAL POWER SOLUTION PARTNER.

The Borri Group has been developing and building uninterruptible power systems since 1932 and is a global provider of power electronics systems and solutions for harsh industrial and demanding critical power requirements.

— Borri's R&D vast expertise in all facets of firmware, power electronics and mechanical design provides innovative solutions for tomorrow's problems in Industrial and Critical Power applications.

— The company prides itself on its first-class service and superior engineering disciplines. To ensure sustained quality, Borri manages all its processes in house from feed studies to design, production and after sales service technology.

— Based in Bibbiena, Italy with over 15,000 m<sup>2</sup> production area, Borri operates across all five continents with subsidiaries in USA, Canada, Germany, UAE, India and Malaysia.

— It has also established a strong distributor network, able to deliver on site support and technical guidance indicative of our own capabilities.



## Critical Power Solutions

Designing and building mission critical UPS's 1- and 3-Phase up to 21 MW.



## Industrial Power Solutions

Designing, engineering and building customised AC and DC power supply systems for harsh industrial applications.



## Service

Borri team of experts support you to the highest standards no matter where you are in the world.



UPS 3-PHASE

# INGENIO PLUS

from **30 kW** ————— to **160 kW**





## Applications



Small data centre



Medium data centre



Network & Server



Industrial controls & process automation



Medical equipment



Building automation

### Power factor 1

No costs related to electrical infrastructure oversizing and power factor correction.

### Compact footprint

Efficient compact UPS with transformer free design.

### Continuous savings

Patented Green Conversion technology provides high efficiency and extended life on UPS critical components and batteries.

The ideal power protection solutions for a range of critical applications, including networking and small to medium data centres, health, finance, industrial processing, building and transportation. Featuring Green Conversion patented technology, Ingenio Plus provides high efficiency even at light loads.

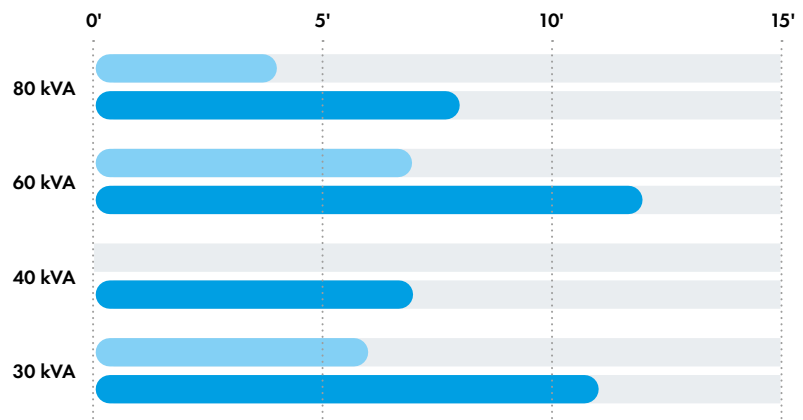
**Ingenio Plus:** compact and very high efficient solution perfect for supplying reliable uninterrupted quality power to all critical applications.



### Features and benefits

- Green Conversion technology, high efficiency even at light load and the lowest TCO in its category.
- 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.
- 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.
- 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 all international product standards for maximum quality guarantee.
- Backfeed protection contact.
- Lithium Battery compatible on selected models.

### Back up time with internal batteries



\*Optional touch screen display (on 60-160 kW UPS)

### Main options

- Isolation transformer.
- 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 redundant up to 8 units for system redundancy.
- Load-sync option.
- Common battery (on 60-160 kVA range).
- Backfeed protection trip coil.
- Separate rectifier and bypass input for INGENIO PLUS 30-40 kVA.
- Colour touch screen 7" display on 60-160 kVA UPS (\*)



## INGENIO PLUS technical data

| Rating (kVA)                                      | 30   | 40   | 60   | 80  | 100   | 125 | 160 |
|---|--|--|--|-----|---|-----|-----|
| Nominal Power (kW)                                | 30   | 40   | 60   | 80  | 100   | 125 | 160 |
| UPS dimensions WxDxH (mm)                         | 465x650x1230   |  | 560x940x1500   |     | 560x940x1800                                    |     |     |
| UPS weight (kg)                                   | 120  | 140  | 190  | 215 | 320   | 360 | 380 |
| UPS weight with internal battery (kg)             | 365  | 385  | 770  | 785 | -   | -   | -   |
| Battery configuration                             | Internal or external, 360 to 372 cells, VRLA (other options)   |  |  |     | External 360 to 372 cells, VRLA (other options) |     |     |
| Max autonomy with int. battery 70% load (min)     | 11   | 7  | 12   | 8   | -   | -   | -   |
| <b>Input</b>                                      |  |  |  |     |   |     |     |
| Connection type                                   | Hardwired 4w   |  | 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 to 65 Hz  |  |  |     |   |     |     |
| Power factor                                      | >0.99  |  |  |     |   |     |     |
| Current distortion (THDi)                         | <3%  |  |  |     |   |     |     |
| <b>Output</b>                                     |  |  |  |     |   |     |     |
| Connection type                                   | Hardwired 4w   |  |  |     |   |     |     |
| Nominal voltage                                   | 380/400/415 Vac 3-phase with neutral   |  |  |     |   |     |     |
| Frequency   | 50/60 Hz   |  |  |     |   |     |     |
| Voltage regulation                                | Static: ±1%; Dynamic: IEC/EN 62040-3 Class 1   |  |  |     |   |     |     |
| Power factor                                      | Up to 1, without power derating  |  |  |     |   |     |     |
| Overload capacity*                                | Inverter: 110% for 10 min, 125% for 5 min, 150% for 30 s ; Bypass: 150% continuous, 1000% for 1 cycle  |  |  |     |   |     |     |
| Efficiency (AC/AC)**                              | Up to 99%  |  |  |     |   |     |     |
| Classification by IEC/EN 62040-3                  | VFI-SS-11  |  |  |     |   |     |     |
| <b>Connectivity and function extensions</b>       |  |  |  |     |   |     |     |
| Front panel                                       | Graphic display, mimic LED panel and keyboard, local EPO   |  |  |     |   |     |     |
| Remote communication                              | <b>Included:</b> (30 to 160 kVA): backfeed protection monitoring contact.<br><b>Included (60 to 160 kVA):</b> serial RS232 and USB; input terminal block (remote emergency power off, battery circuit breaker aux. cont. external maintenance bypass circuit breaker aux. cont., diesel mode aux. cont.).<br><b>Optional:</b> SNMP adapter (Ethernet), Web interface (Ethernet), ModBus-TCP/IP (Ethernet), ModBus-RTU (RS485), 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 and load-sync box (2 UPS systems); other options on request   |  |  |     |   |     |     |
| <b>System</b>                                     |  |  |  |     |   |     |     |
| Protection degree                                 | IP 20  |  |  |     |   |     |     |
| Colour  | RAL 9005   |  |  |     |   |     |     |
| Installation layout                               | 10 cm wall-gap, side by side installation allowed  | Wall and side by side installation allowed, 80 cm side clearance (with internal battery) |  |     |   |     |     |
| Accessibility                                     | Front and top access, bottom cable entry   | Front and top access, side access (with internal battery) bottom cable entry             | Front access, side access (with internal battery) bottom cable entry |     |   |     |     |
| *conditions apply **according to IEC/EN 62040-3   |  |  |  |     |   |     |     |
| <b>Other features</b>                             |  |  |  |     |   |     |     |
| <b>Environmental</b>                              |  |  |  |     |   |     |     |
| UPS operating temperature range                   | 0°C to +40°C   |  |  |     |   |     |     |
| UPS storage temperature range                     | -10°C to +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   |  |  |     |   |     |     |
| <b>Standards and certifications</b>               |  |  |  |     |   |     |     |
| Quality assurance, environment, health and safety | ISO 9001:2015, ISO 14001:2015, BS OHSAS 18001:2007   |  |  |     |   |     |     |
| Safety  | IEC/EN 62040-1   |  |  |     |   |     |     |
| EMC   | IEC/EN 62040-2   |  |  |     |   |     |     |
| Environment aspects                               | IEC/EN 62040-4   |  |  |     |   |     |     |
| Test and performance                              | IEC/EN 62040-3   |  |  |     |   |     |     |
| Protection degree                                 | IEC 60529  |  |  |     |   |     |     |
| Marking   | CE   |  |  |     |   |     |     |

# GUARDIAN NET REMOTE DIAGNOSTICS AND PREVENTIVE MONITORING

Guardian Net improves Business Continuity by remote diagnostics and preventive monitoring of your UPS system and peripherals by preventing unpredictable anomalies to become failures.

Early detection of any deviations of critical parameter and prompt reaction in case of alarms result in extended uptime and enhanced operational efficiency. Real time monitoring and periodic reports on the health of equipment provide complete peace of mind, delivering unparalleled support experience.



**BORRI**  
GUARDIAN NET

## BENEFITS

### Extending Uptime

Together with a Borri Maintenance Contract, Guardian Net allows our Service specialists to take care of your system by monitoring its parameters and quickly reacting to anomalies.

### Increasing Business Continuity

Guardian Net provides you with continuous monitoring of your system, giving you comprehensive operational awareness and providing technical recommendations and reports by Borri Service Centre for improving the quality and reliability of your system.

### Reducing Total Cost of Ownership

Guardian Net is an on-site virtual Service specialist 24/7, monitoring all relevant parameters, maximizing system performance, reducing on-site maintenance and minimizing your total cost of ownership by extending the life of your critical equipment.

## FEATURES

### Web Proactive Maintenance

Our Service specialists monitor your equipment from the Borri Service Centre, analysing data and trends, to proactively recommend actions for ensuring equipment always performs at its best.

### Warning and alarm notification

Guardian Net continuously monitors the system and should any critical parameters exceed the preset tolerance, it generates a warning or alarm notification to you and the Borri Service Centre. Our Service specialists will investigate the data, find the cause and take actions based on the customer's maintenance contract. This ensures that in case Service engineers are dispatched on-site, they arrive prepared for first time resolution, reducing downtime and increasing system availability.

### Status Reports

The unit parameters are collected by our Service Centre and presented in periodic status reports. You will receive a comprehensive analysis of your equipment and its operational performance, as well as demonstration that it is under continuous remote monitoring.

### Total Service Support

Borri supports critical infrastructures with a comprehensive offering of their Service specialists, enhancing system availability and ensuring total peace of mind 24/7.

## Data Manager Unit (DMU) technical data

|                               |   |
|-------------------------------|---|
| <b>To monitored device</b>    |   |
| Communication port            | RS485 ModBus  |
| Protocol                      | ModBus-RTU/ASCII slave  |
| Max no. of connected devices* | 16  |
| <b>To Service Centre</b>      |   |
| Communication port            | RJ45 Ethernet   |
| Protocol                      | Open VPN (based on Open SSL), http, SMTP, ModBus-TCP/IP   |
| Services                      | Web Server, NTP time stamping   |
| Notification                  | <b>Included:</b> email - <b>Optional:</b> text message via https or via RS232 modem             |
| <b>Options</b>                |   |
|                               | 30 h backup battery, system integrator version (no box), GSM/GPRS modem (SIM card not included) |
| <b>System</b>                 |   |
| Power supply                  | 100 to 240 Vac  |
| Installation                  | Wall-mounted box  |
| Dimensions WxDxH (mm)         | 400x200x400   |
| Weight                        | 15 kg (w/ backup battery), 12 kg (w/o backup battery)   |
| Protection degree             | IP 20 (IP 65 on request)  |
| Colour                        | RAL 7035  |
| <b>Environmental</b>          |   |
| Operating temperature range   | 0°C to 40°C   |
| Storage temperature range     | -10°C to 70°C   |

\*conditions apply

# SERVICE

Customer's expectation defines Borri's priority from the early analysis of the project requirements to a worldwide commissioning and service. Many thousands of systems have been successfully installed and maintained globally, with continuous support from a highly trained team of expert, certified technicians and engineers. From the professional set-up of Borri's training centre or on site, the training and service team stand ready to provide support and contribute to tailored training at Borri or on site. You can be assured of Borri support to the highest standards no matter where in the world you are.



## Planning, installation, commissioning

Borri assist you in every single step of your project. Our R&D team can analyse and develop solutions to a wide range of edge system requirements.



## Analytical tests

Borri undertakes a series of analytical tests in order to guarantee higher efficiency and continuity to your system operation.



## Repair & spare parts

All spare parts supplied by Borri are original, tested and guaranteed to be fully compliant with Borri solutions.



## Remote monitoring

Guardian Net remote monitoring system allows you to detect any deviation from optimum operation and trigger proper and immediate response, so that anomalies don't evolve into issues.



## Maintenance

Preventive maintenance guarantees uninterrupted operations and optimised system efficiency.



## Battery tests

Batteries have a limited time life and their proper maintenance is of high importance to guarantee efficiency to the UPS and avoid potential failures. Borri delivers high quality and performing batteries to assure smooth operations.



## Training

Borri offers distributors and customers a service training structured in 3 levels. Courses can be held in Borri training centres or on-site.

Since 1932,  
securing your  
power with passion  
and commitment.





[www.borri.it](http://www.borri.it)

**BORRI HEADQUARTERS  
AND FACTORY**

**Borri S.p.A**

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Via 8 Marzo, 2  
52011 Bibbiena (AR)  
Italy  
Tel. +39 0575 5351  
Fax +39 0575 561811  
[info@borri.it](mailto:info@borri.it)

**BORRI SUBSIDIARIES  
AND SERVICE CENTRES**

**Asia Pacific**

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Borri Asia Pacific  
Engineering Sdn. Bhd.

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No.13, Jalan Serendah 26/41,  
Sekitar 26, Seksyen 26,  
40400 Shah Alam, Selangor  
Malaysia  
Tel. +60 3 5191 9098  
Fax +60 3 5103 8728  
[sales@borri-asia.com](mailto:sales@borri-asia.com)

**Canada**

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Borri Power Systems  
North America Inc.

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205 - 3689 E 1st Ave.  
Vancouver, BC V5M 1C2  
Canada  
Tel. +1 604 428 7455  
Fax +1 346 980 8875  
[info@borripower.com](mailto:info@borripower.com)

**Middle East and Africa**

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Borri Power  
Middle East FZCO

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1-151, Techno Hub  
PO Box: 342036  
Dubai Silicon Oasis, Dubai UAE  
Tel. +971 4 3200528  
Fax +971 4 3200529  
[info@mea.borripower.com](mailto:info@mea.borripower.com)

**India**

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Borri Power India Pvt. Ltd.

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Plot No. 69, Ground Floor  
Nagarjuna Hills, Panjagutta  
Hyderabad, 500 082  
India  
Tel. +91 40 2335 4095  
[info@mea.borripower.com](mailto:info@mea.borripower.com)

**Germany**

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Borri Power Germany GmbH

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Gewerbstraße 10  
26789 Leer  
Germany  
Tel. +49 491 99 75 61 83  
Fax +49 491 99 75 61 84  
[info@borri.de](mailto:info@borri.de)  
[service@borri.de](mailto:service@borri.de)

**USA**

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Borri Power (US) Inc.

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9000 Clay Road, Suit 104  
Houston, Texas, 77080  
USA  
Tel. +1 346 212 2686  
Fax +1 346 980 8875  
[info@borripower.com](mailto:info@borripower.com)