

# RTB.igbt

## IGBT Industrial 3-Ph Battery Chargers

From 110 to 900 Vdc, 50-800 A

DC UPS

Borri RTB.igbt range of Industrial IGBT-based 3-Phase Battery Chargers are designed and built for the harshest conditions and to provide high reliable power supply and battery charging capability. IGBT charger provides low THDi rejection and high power factor, downsizing the AC supply line and allowing cost reduction.

RTB.igbt uses a three-phase, three-level conversion bridge which combines thyristor and IGBT technologies providing rugged design and best-in-class performance. Using a powerful microprocessor to control all the functions provides reliable operations with ease of settings and communication.

RTB.igbt is suitable for charging nickel-cadmium or lead acid batteries while simultaneously supplying DC loads. It can also be used without batteries as a direct power supply.



## Industrial Power

### Applications

- Oil & Gas.
- Petrochemical.
- Power Generation.
- Transportation.
- Mining industries.
- Transmission & distribution.
- Other Heavy Industries.

### Main features

- Input THDi <5%, PF up to 0.99.
- Proven microprocessor control.
- Large LCD panel with mimic panel and history.
- Wide selection of alarms, indications and measurements.
- Electronic battery and charger output current limit.
- Rugged IGBT-thyristor bridge with isolation transformer.
- Communication ports and potential free contacts.
- 4 level battery charging including manual charge.
- High MTBF and low MTTR.
- 20 programmable alarm and status LEDs.
- Operates with Nickel-cadmium (vented/ gas recombination) and Lead acid batteries (vented/ gas recombination).
- Advanced Battery Management.
- Flexible in-built features.
- Operation without battery (Rectifier).
- Highly customizable.
- Easy maintenance and serviceability.

**BORRI**®

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## IGBT Industrial 3-ph Battery Chargers

### RTB.igbt technical data

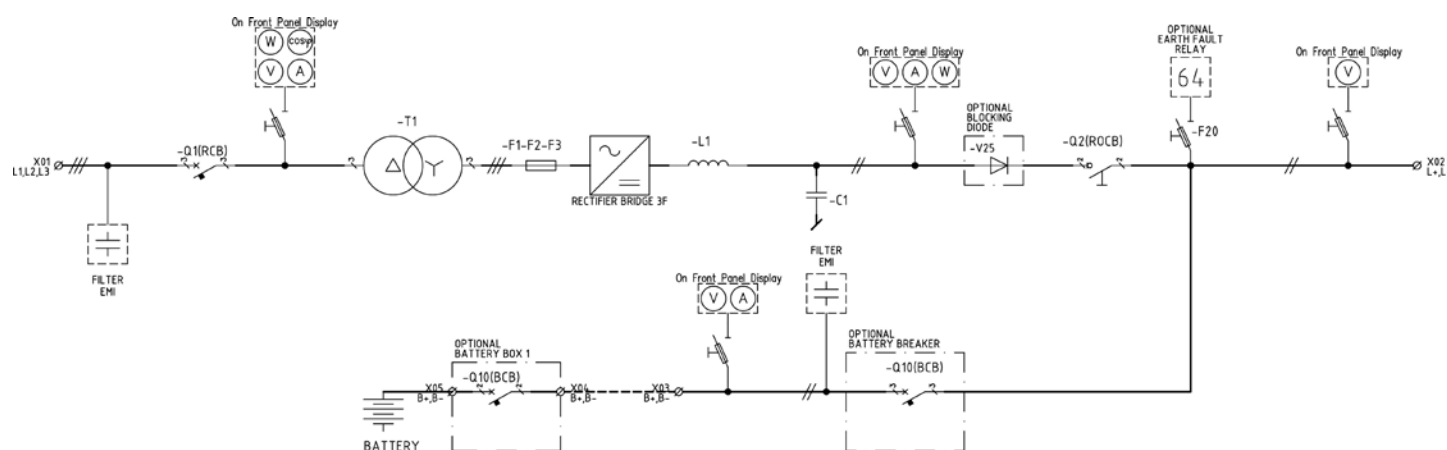
Rating (A)	50	100	150	200	300	400	500	600	800
<b>Input</b>									
Nominal voltage	208/380/400/415/480 Vac 3-phase $\pm 10\%$								
Frequency	50/60 Hz $\pm 5$ Hz								
Power factor	Up to 0.99								
Input THDi	<5% @ rated load								
<b>Output</b>									
Nominal voltage	110/125/220/400/900 Vdc								
Static voltage regulation	$\pm 1\%$								
Voltage ripple	$\leq 1-2\%$ with and without battery depending on output voltage								
Charging characteristic	Constant current / constant voltage (I/U as per IEC 478-1) during float charge								
<b>System</b>									
Dimensions	From 600 mm to 1400 mm width, 800/1000 mm depth, 2100 height								
Cooling	Forced								
Colour	RAL 7035 (other colours optional)								
Protection degree	IP 30 as per IEC 60529 (other protection degrees up to IP 54 optional)								
Operating temperature	-10 °C to +40 °C (up to 55°C optional)								
Storage temperature	-20 °C to +70 °C								
Altitude	<1000 m (derating according to EN 62040-3)								
Audible noise (dBA)	<55 to 70 dBA at 1m depending on rating and fan redundancy								
<b>User Interface</b>									
Front panel	LCD panel, LED mimic, keyboard. 20 programmable alarm and status LEDs								
Standard alarms	AC Fail, DC Hi, DC Low, Charger Fail, Overload, Blown Fuses, Battery Discharge, Common Alarm (many other available as standard)								
Connectivity	Potential free contacts x 8 standard, RS-485 MODBUS (optional)								
<b>Standards</b>									
Safety: IEC EN 50178, IEC EN 62040-1 EMC: IEC EN 61000-6-2, IEC EN 61000-6-4, IEC EN 62040-2 Test and performance: IEC EN 60146 Marking: CE; Optional: CSA/UL Certified									

## Standard features

- Internal rectifier input and output switches.
- IGBT-thyristor bridge with input isolation transformer.
- LC ripple filter.
- Rectifier protection fuse.
- Battery monitoring and testing system.
- Audible alarm.
- 8 potential free contacts fault remote alarm.
- Floor mounted cabinet with IP30 protection and IP20 open door.
- Power and control cable markings.
- Halogen free cable.
- Component markings.
- Bottom cable entry.
- Standard labeling / nameplate.
- Advanced Multi-functional LCD panel.
- 20 programable alarm and status LEDs.



## RTB.igbt schematic (single configuration)



Other configurations available:

- Dual Charger (one battery with load sharing)
- Redundant
- Others on request

## Options

Borri's engineer can help you to design the best solution for your application with a wide range of options, some of which are:

### System

- RS485 MODBUS communication port.
- Advanced Multi-functional LCD panel (UFP) with built-in MODBUS RS485 communication port.
- Parallel redundant (CANBUS) with load sharing.
- Special mains input voltages up to 690 VAC and frequency 60 Hz.
- Tropicalized control electronics boards.
- DC ripple filter 1%, 0.1 %, 200mV.
- Rectifier input CB or fuse or switch.
- Battery CB, fuse or switch in rectifier.
- Battery CB or fuse box.
- Load CB, fuse or switch.
- DC voltage dropper diodes.
- DC distribution.
- Battery installed inside the rectifier cabinet.

## Alarms and measurement

- Analog meters.
- Additional LED alarm indicators.
- Additional Relay cards 2 x 8 free contacts.
- Fan failure alarm.
- Low battery electrolyte level alarm.
- Temperature dependent battery charging with temp. probe.
- Temperature alarm.
- Battery circuit failure alarm.
- Ground fault alarm.
- High rate interlock.

## Control options

- Remote rectifier shutdown.
- Remote forced floating charge.
- Remote room fan control.
- Remote high rate charge.
- Communication
  - TCP / IP interface
  - Protocol converters Profibus DP
  - J-bus DNP3
  - IEC 61850.
- Monitoring and management software.

## Mechanical

- Protection up to IP54.
- Natural cooled bridge.
- Ventilation n+1 or 100% redundant.
- Vermin proof.
- Top cable entry.
- Interior cabinet light.
- AC single phase socket.
- Cabinet heater.
- Special colour.
- Protection plates.
- Special cable marking (both ends).
- Air filters at air inlet.

## Batteries

Borri has over 90 years of experience in designing and supplying AC and DC UPS systems with batteries.

With our vast experience in battery technologies and our close technical and commercial relationships with the world largest manufacturers of Nickel Cadmium, Lead Acid and Lithium ion Industrial batteries we are able to offer expert advice on the specifying, selection, operation and testing of batteries to best suite your application and needs.

## 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 center or on site, the training and service team provide support and tailored training at Borri or at your site. You can be assured of Borri support to the highest standards no matter where in the world you are.

- Planning, installation, commissioning
- Maintenance and Service
- Analytical testing
- Battery tests
- Spare parts
- Training



## Who we are

Borri 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 is a brand of Legrand, a publicly traded company and a global specialist in electrical and digital infrastructures, offering high-value -added products and solutions for commercial, residential and industrial buildings.

Borri's R&D vast expertise in all facets of firmware, power electronics and mechanical design provides innovative solutions for tomorrows 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.

**Since 1932, securing your power with passion and commitment.**

