

STS

STATIC TRANSFER SWITCHES

1- and 3- PHASE





STS - STATIC TRANSFER SWITCHES 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 20,000 m² 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.

STATIC TRANSFER SWITCHES
1- and 3-PHASE

STS

from 16 A ———— to 3000 A





Applications



Network
& Server



Data centre



Industrial
controls & process
automation

Short circuit protection

Ensuring maximum source protection in dual feed applications.

No break seamless transfers

Automatically transferring loads to alternative power sources when the primary power source fails or is not available.

High availability

Thanks to source separation, dual maintenance bypass and redundant critical paths.

1-Phase and 3-Phase static transfer switches for seamless load transfer in dual path power systems. The STS rugged design and high reliability provides supply redundancy and prevents fault propagation.

1-PHASE STATIC TRANSFER SWITCHES

STS 16-32

from **16 A** — to **32 A**

STS 16-32 front view



STS 16 rear view



STS 32 rear view

ITS maintenance switch main features

- 16 A and 32 A version.
- 6 x 40 A input terminal board.
- Zero switching time.



1-phase static transfer switch series designed to offer solutions for the protection of single-phase loads.

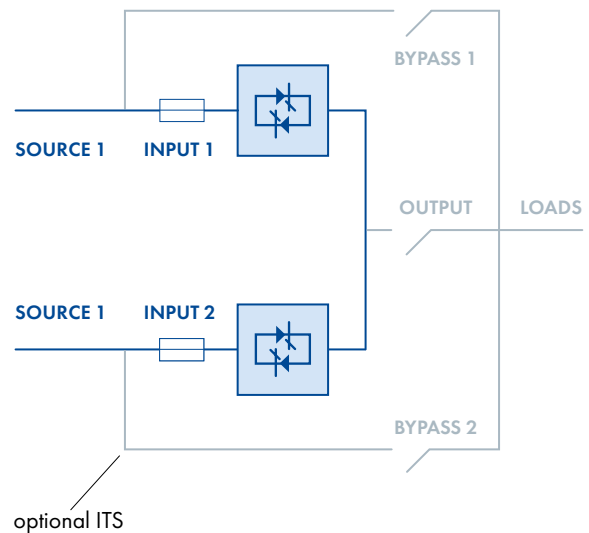
Features and benefits

- Dual redundant power supplies to control boards, for increased availability.
- Redundant cooling and fan failure monitoring, for reliable operation.
- Real-time SCR fault sensing, preventing fault propagation.
- High overload capability, for robust electrical design.
- ITS maintenance switch, for hot swap maintainability.
- Compact 19" rack system design, for easy integration.
- LCD/LED display, providing user friendly interface.
- Comprehensive set of communication options for total remote monitoring of equipment operation.

Main options

- 100/110/115/120/127 Vac nominal voltage and NEMA sockets.
- RS485 ModBus interface.
- SNMP interface.
- ITS maintenance switch.

STS block diagram



STS 16 - STS 32 technical data

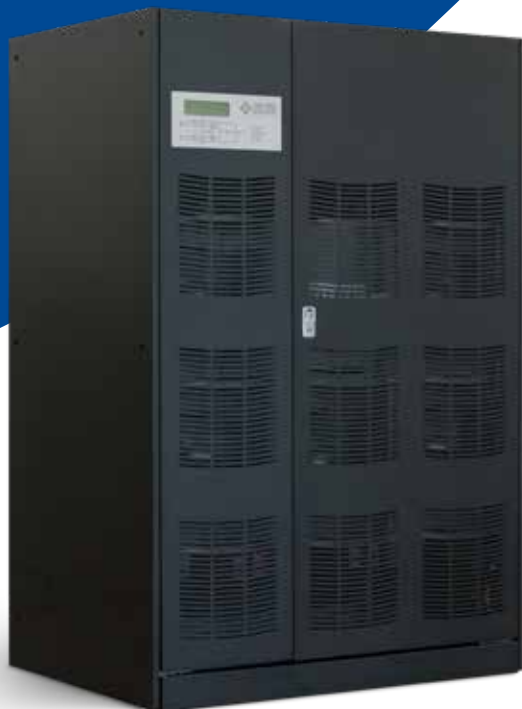
Model	STS 16	STS 32
Rating (A)	16	32
Dimensions WxDxH (mm)	440x275x88	
Weight (kg)	8	9
Input		
Connection type	Hardwired 5w	
Nominal voltage	200/208/220/230/240 Vac 1-phase	
Voltage tolerance	± 5% (up to ±20%)	
Absolute maximum voltage range	150 Vac to 300 Vac	
Frequency and range	50/60 Hz, ± 5% (up to ±20%)	
Source harmonic voltage content	Unlimited	
Transfer phase angle	5° to 20°	
Output		
Connection type	8 IEC-C 13, hardwired 3w	Hardwired 3w
Nominal voltage	200/208/220/230/240 Vac 1-phase	
Frequency	50/60 Hz	
Transfer time	2 to 6 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 10 min, 150% for 1 min, 700% for 0.6 s	
Efficiency (AC/AC)	99%	
Connectivity and function extensions		
Front panel	Graphical LCD display	
Remote communication	Included: RS-232 ModBus, USB, voltage free relay contacts; Optional: one slot for SNMP adapter or RS-485 ModBus adapter	
System		
Protection degree	IP 20	
Colour	RAL 9005	
Installation layout	Rack mounted	
Accessibility	Front and rear	

Other features

Environmental		
Operating temperature range	-5°C to +40°C	
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	
Standards and certifications		
Quality assurance, environment, health and safety	ISO 9001:2015, ISO 14001:2015, BS OHSAS 18001:2007	
Safety	IEC 60950-1	
EMC	EN 55022, EN 55024	
Transfer voltage limit	IEEE Standard 446	
Protection degree	IEC 60529	
Performance	IEC/EN 62310-3	
Marking	CE	

3-PHASE STATIC TRANSFER SWITCHES

STS 300

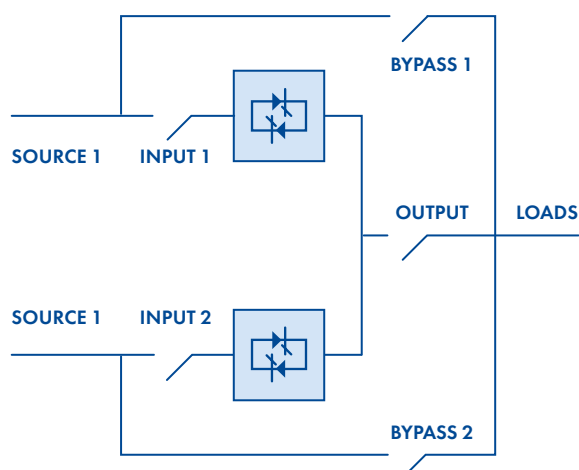
from **100 A** — to **3000 A**

3-phase centralised static transfer switch series designed to offer solutions for the protection of loads even in harsh environment.

Features and benefits

- Continuous monitoring of voltage and frequency and automatic instant (<4 ms) 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.
- Circuit breakers for reliable and safe tripping on all operating conditions.

STS block diagram



Main options

- Isolation transformer.
- Plug-in breakers.
- Output distribution panels.
- Panel builder version.
- Additional SPDT contact relay board.
- 4-pole configuration.
- Operation without neutral.



Dry contact relay card (Included)

Loads are normally fed by the bypass line, during a mains failure the inverter takes over the load without interruption.



RS485 ModBus-RTU port (Included)

To send UPS status to BMS's by RS485 connection and ModBus-RTU protocol. For remote monitoring and remote service

STS 300 technical data

Rating (A)*	100	250	400	630	800	1000	1250
Dimensions WxDxH (mm)**	820x835x1475			1220x860x1900			2000x1000x2100
Weight (kg)**	265	290	305	615	660	1000	1450

Input

Connection type	Hardwired 4w
Nominal voltage	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 (if THD>20% transfer time ≤10ms)
Transfer phase angle	5° to 30°

Output

Connection type	Hardwired 4w
Nominal voltage	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
Efficiency (AC/AC)	>99%

Connectivity and function extensions

Front panel	Graphical LCD display, mimic LED panel and keyboard
Remote communication	Included: dry contact relay card, RS232 and RS485 serial ports, ModBus-RTU protocol. Optional: additional dry contact relay card
Optional function extensions	4-pole 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 9005 (other options)
Installation layout	Wall, back to back and side by side installation allowed
Accessibility	Front access, bottom and top cable entry

*rating up to 3000 A on request **3-pole version

Other features

Environmental

Operating temperature range	0°C to +40°C
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)	<62

Standards and certifications

Quality assurance, environment, health and safety	ISO 9001:2015, ISO 14001:2015, BS OHSAS 18001:2007
Safety	IEC/EN 62310-1
EMC	IEC/EN 62310-2
Breakers	IEC/EN60947-3
Transfer voltage limits	IEEE Standard 446
Protection degree	IEC 60529
Performance	IEC/EN 62310-3
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

To monitored device	
Communication port	RS485 ModBus
Protocol	ModBus-RTU/ASCII slave
Max no. of connected devices*	16
To Service Centre	
Communication port	RJ45 Ethernet
Protocol	Open VPN (based on Open SSL), http, SMTP, ModBus-TCP/IP
Services	Web Server, NTP time stamping
Notification	Included: email - Optional: text message via https or via RS232 modem
Options	
	30 h backup battery, system integrator version (no box), GSM/GPRS modem (SIM card not included)
System	
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
Environmental	
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.



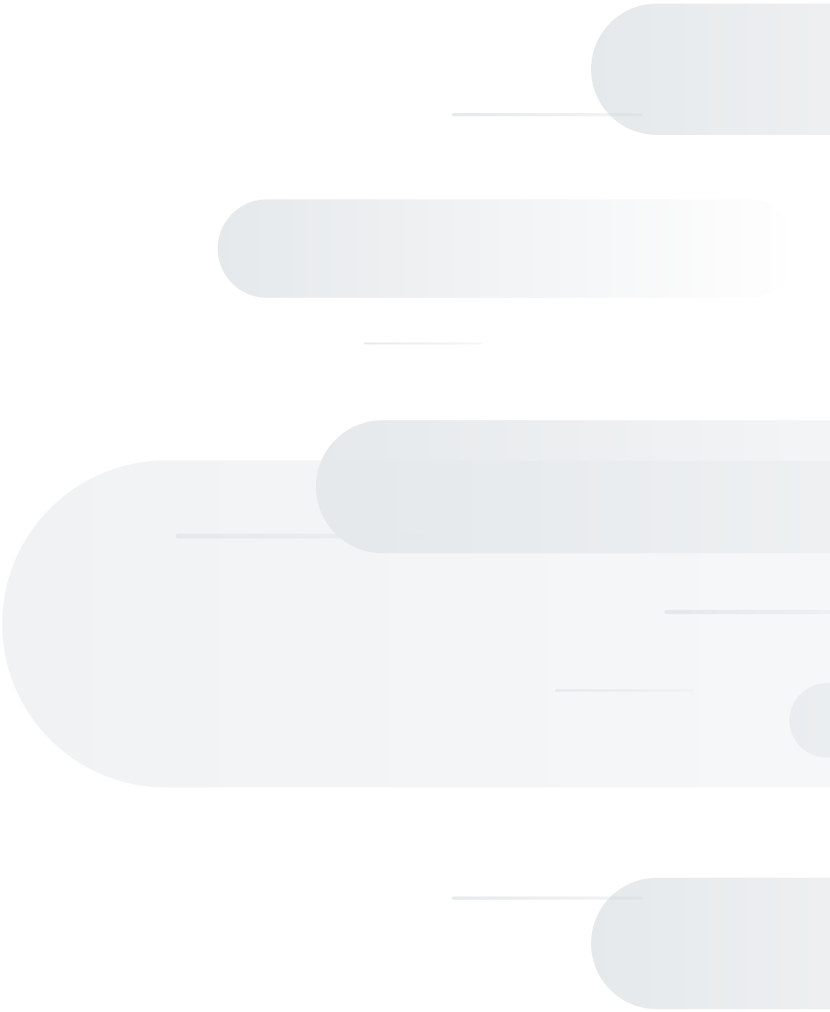
Battery tests

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.



**Extract from
OMG60326revA | 07-2020**

Due to our policy of continuous development, data in this document is subject to change without notice and becomes contractual only after written confirmation



www.borri.it

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