

# BRIC Modular

## Static Frequency Converter (SFC)

**50kW to 1500kW**

The BRIC Modular is a modular design static frequency converter (SFC), providing reliable and efficient power conversion. Each power module uses the latest IGBT technology, a high-efficiency switching device capable of handling high voltage and current, reducing energy losses during switching process, making them suitable for a wide range of applications, from industrial machinery to renewable energy systems.



### PERFECT FOR:



Generators



Offshore / Dock



Flight Simulator System



Data Centers



Industrial

## FEATURES

### Power Performance

- Up to 96% efficiency across a wide load range
- Clean sinewave output voltage
- Near-unity input power factor > 0.99
- Low input harmonic distortion <3%
- Wide range of Frequency available: 50Hz and 60Hz

### High Scalability

- Power capacity from 50kW to 1500kW
- Parallel expansion up to 30 power modules of 50kW.

### Capabilities

- Hot-swappable modules to reduce Mean Time To Repair (MTTR)
- Smart Rotation Redundancy to optimized reliability.

### Easy to Control

- Large HMI Coloured LCD Touch Screen for advanced control and monitoring.

## TYPICAL APPLICATIONS

- 50Hz to 60Hz or 60Hz to 50Hz industrial applications
- Dockside converter allows generators to be turned off while at port to save fuel and eliminate pollution
- Replacement of motor generators sets
- As a clean power supply to isolate an unstable grid from critical load
- Offshore/Dock and Flight Simulator System encounter varying power line frequency, Frequency converter ensures the compatibility of electrical system in these environment.

The BRIC Modular Static Frequency Converter is ideal for medium to large sized power applications. With its modular structure ranging from 50 to 600kW configured seamlessly in a single frame system. The SFC can be parallel to increase the system's total capacity and redundancy.

## POWER MODULE REDUNDANCY

Power module redundancy is a critical feature in the BRIC Modular SFC to ensure continuous power availability and system reliability.

Power module redundancy refers to the inclusion of additional power module (N+1) in a system so that if one module fails, the additional power module automatically takes over, ensuring that the total output remains constant.

- **Increased Reliability:** Reduces the risk of system downtime due to power module failure.
- **Continuous Operation:** Ensures critical system remains operational without interruption.
- **Maintenance Flexibility:** Allows for maintenance and replacement of modules without affecting system performance



## FLEXIBLE MODULARITY

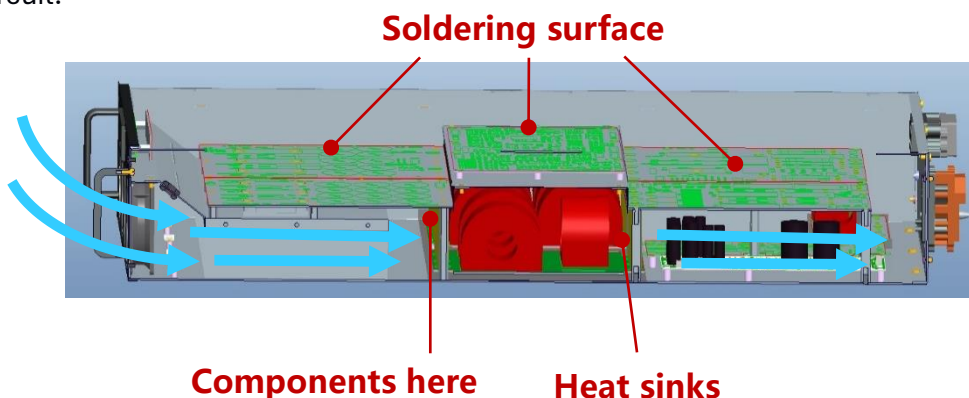
To ensure the highest levels of power availability, major power components including 3-Level IGBT and speed controlled fans for heat dissipation are assembled in one single optimized power module (PM) for full system operation. Furthermore all Power Modules and critical components are easily accessible from the front of the System, minimizing downtime, reducing Mean Time To Repair (MTTR) and ensure power continuity should a module fails.

The modular architecture offers a scalable solution by providing the ability to add or remove power modules when the load increases or decreases, ensuring that the SFC always operate at optimum efficiency.



## CHANNELED AIR FLOW DESIGN

In order to optimize the performance of the power modules, the modules have an unique air flow design with directed airflow channel. Fans are specifically positioned to direct cool air over the components and heat sinks to increase heat dissipation. It prevent dust and moisture from accumulating at the soldering points that could result in short circuit.



# PARALLEL ARCHITECTURE

The flexibility of the power modules allows parallel expansion to achieve redundancy and to increase the total system capacity. Up to 30 power modules of 50kW or 3 cabinets of 500kW can be parallel to achieve total capacity 1500kW.

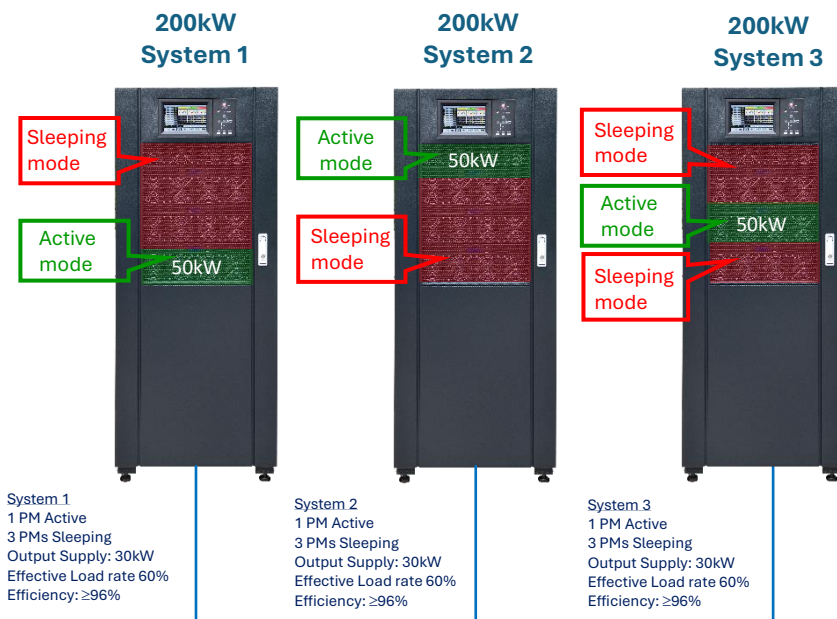


3 cabinets of 500kW in parallel providing total **1500kW**

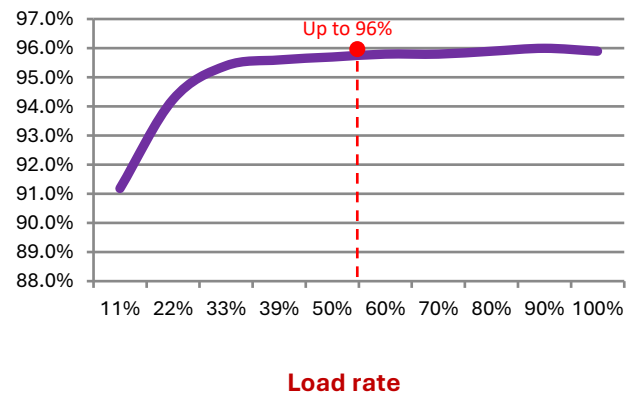
- ❑ Parallel expansion up to 30 power modules
- ❑ Easy connection by parallel cable
- ❑ Compact Footprint of <math><2\text{m}^2</math>
- ❑ Higher Power Density

# SMART ROTATION REDUNDANCY

In parallel system configuration, the SFC ensure the highest efficiency also at partial load rate conditions down to very low load rate conditions - using Smart Rotation Redundancy. Each SFC automatically adjust the number of active power modules (PM) to share the load demand equally, putting the remaining power modules in a “sleeping mode”. With this feature, the active PM operate at a higher effective load percentage, thus improving the efficiency and reliability of the overall SFC System.



## Efficiency



Overall Active System Capacity: 150kW  
 Overall Output Supply: 90kW  
 Effective Total Load Rate: 60%  
 Achieve Efficiency:  $\geq 96\%$

# SYSTEM ARCHITECTURE

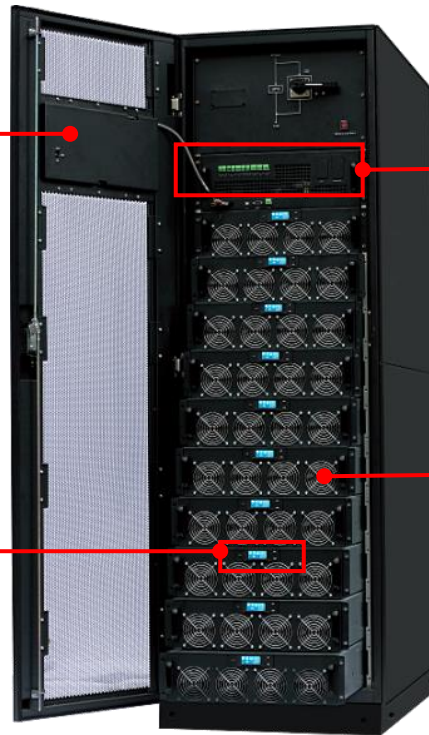
The BRIC Modular SFC is built of modular power modules as well as other critical components that can be removed from the front thereby affording easy accessibility and smooth maintenance and operation.

## Smart Human Machine Interface

Equip with a Smart HMI, enables direct control and access to all parameters and waveforms for management of SFC and power modules.



Independent LCD display for each power module with soft start function.



Control module



## Power Module (PM)

PM is designed with an independent LCD, redundancy fans, high power density and channeled air-flow.

# SMART HUMAN MACHINE INTERFACE

The BRIC Modular SFC is fully equipped with user-friendly monitoring and controls in various languages. A large coloured LCD touch screen provides direct controls and parameters displays on a single page view.



# TECHNICAL SPECIFICATION

Input	Voltage	380V – 480V $\pm$ 10%
	Maximum Supply Voltage	110%
	Nominal Frequency	50Hz or 60Hz
	Frequency Tolerance	$\pm$ 5Hz
	Power System	3 phase + N + G
	Power Factor	$\geq$ 0.99
	Current Harmonics	THDi < 3% (linear load)
Output	Capacity Rating	50kW to 1500kW
	Voltage	380V/400V/415V
	Power Factor	1.0
	Frequency	50Hz or 60Hz
	Frequency Accuracy	+/- 0.1%
	Voltage Harmonic	THDv < 1% (linear load)
Protection	Overload Capability	125% for 10 minutes 150% for 1 minute
Performance	Efficiency	96% Typically
User Interface	Frame Display Panel	7.0" LCD Coloured Touch Screen (for Bric Modular 100~200kW Cabinet) 10.4" LCD Coloured Touch Screen (for Bric Modular 250~600kW Cabinet)
	Standard Communication Interface	RS232, RS485, USB, Dry Contacts
	Optional Communication Interface	SNMP Card, AS400
Physical	Power Module Dimension (mm)	510 (W) x 700 (D) x 178 (H)
	Power Module Weight (kg)	45
	Cabinet Material	Electro-galvanized steel
	Cabinet Access	Hinged doors with key locks – Cabinet only
	Protection Index	IP20
	Noise at 1meter	72dB @ 100%
	Cooling	Forced Air cooling
Environmental	Operating Temperature	0~40°C
	Operating Humidity	0~95% (non condensation)
Standards and Certifications	Safety and EMC	IEC/EN 62040-1 and IEC/EN 62040-2
	Performance	IEC/EN 62040-3

Cabinet Model	Max. Capacity	Max. No. of Power Modules	Cabinet Dimension (mm)	Cabinet Weight	Max. Parallel Capacity
BRIC Modular 100	100kW	Up to 2nos. x 50PM	600 (W) x 980 (D) x 1150 (H)	210kg	Up to 1500kW
BRIC Modular 200	200kW	Up to 4nos. x 50PM	650 (W) x 960 (D) x 1600 (H)	350kg	Up to 1500kW
BRIC Modular 250	250kW	Up to 5nos. x 50PM	650 (W) x 1095 (D) x 2000 (H)	490kg	Up to 1500kW
BRIC Modular 300	300kW	Up to 6nos. x 50PM	650 (W) x 1095 (D) x 2000 (H)	490kg	Up to 1500kW
BRIC Modular 400	400kW	Up to 8nos. x 50PM	1050 (W) x 1000 (D) x 2000 (H)	700kg	Up to 1500kW
BRIC Modular 500	500kW	Up to 10nos. x 50PM	1300 (W) x 1100 (D) x 2000 (H)	900kg	Up to 1500kW
BRIC Modular 600	600kW	Up to 12nos. x 50PM	1300 (W) x 1100 (D) x 2000 (H)	1040kg	Up to 1200kW

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