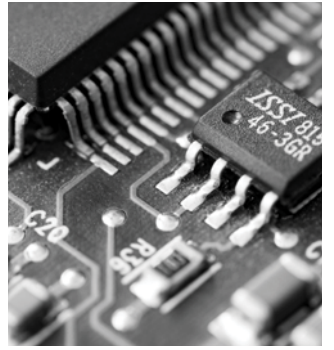


//RAIL

POWERBRIX



.....
MODULAR CONVERTER SYSTEMS FOR
THE AUXILIARY POWER SUPPLY IN
RAIL VEHICLES
.....



POWERTECH
//CONVERTER
ENGINEERED_IN_GERMANY

SMALLER, LIGHTER, HIGHLY EFFICIENT. POWERBRIX SETS NEW STANDARDS FOR THE ON-BOARD POWER SUPPLY IN RAIL VEHICLES.

MODULAR DESIGN FOR FLEXIBLE VEHICLE INTEGRATION

The PowerBriX product family is based on a modular concept that consists of pre-validated master and slave modules, standardized for various voltage and output power levels. Complete power supply systems can be configured by the flexible combination of the PowerBriX modules and a broad set of options that enables customer requirements to be precisely matched. The slave modules are connected to a stabilized and galvanically isolated DC

link. The PowerBriX solution will match all major market requirements in the near future.

PowerBriX follows a consistent modular approach, allowing a high degree of standardization while at the same time enabling fast customer-specific configuration. Additionally, the modular architecture significantly facilitates maintenance operations since single modules can be easily replaced.

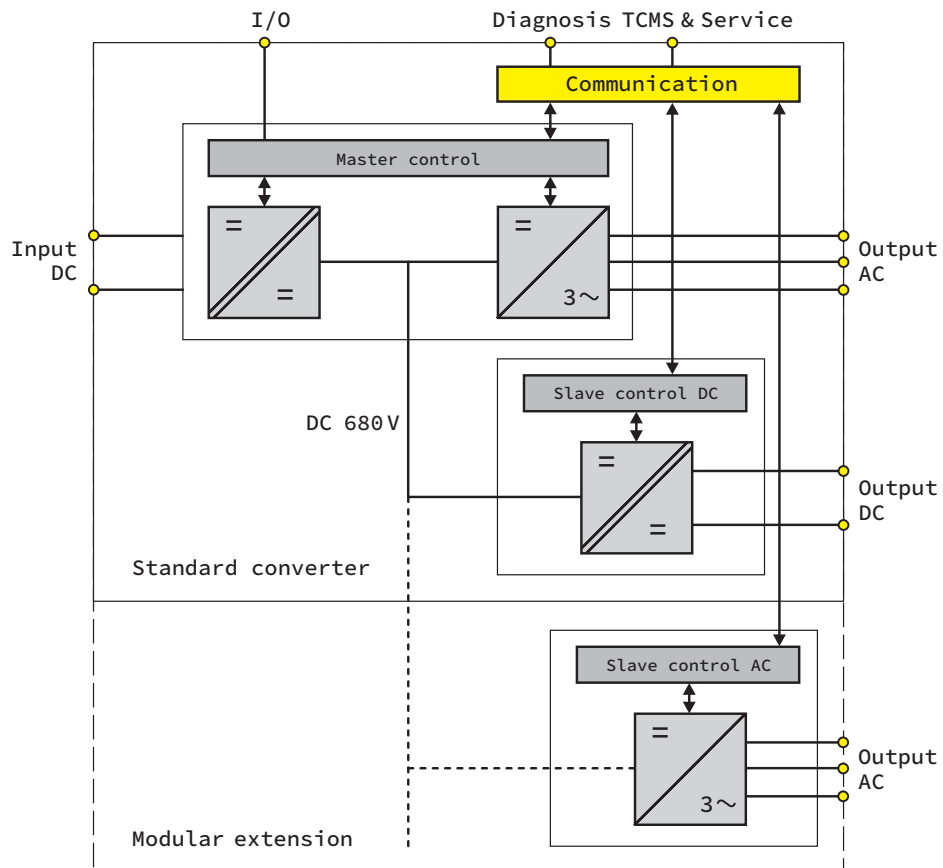
POWERBRIX MODULAR SYSTEM

	Master Module	Slave Modules DC	Slave Modules AC
Voltage	In: 750 VDC / 1500 VDC Out: 3 x 230 V / 400 V AC	Out: 24 V / 37,5 V / 72 V / 110 V DC	Out: 3 x 230 / 400 AC
Power	35 kVA 55 kVA 80 kVA 100 kVA 160 kVA 220 kVA	8 kW 12 kW 16 kW 20 kW 25 kW 30 kW 40 kW 60 kW	10 kVA 15 kVA 25 kVA 40 kVA 65 kVA





SYSTEM ARCHITECTURE



TECHNICAL DATA

STATE-OF-THE-ART SEMICONDUCTOR TECHNOLOGY DELIVERS MINIMUM WEIGHT AND HIGH POWER DENSITY

PowerBriX features an optimized system architecture and state-of-the-art power semiconductors based on silicon (Si) and silicon carbide (SiC). Power modules combine different semiconductor technologies in order to achieve a highly compact design as well as high power density and efficiency.

Silicon carbide technology allows higher frequencies to be used in the power conversion stages, which results in lighter and smaller magnetic components and highly compact modules. A significant reduction in converter size and weight is achieved. PowerBriX thus supports sustainable, highly energy- and cost-efficient operation throughout the entire life cycle. As an additional benefit, comfort for passengers and trackside residents is increased with switching frequencies inaudible to the human ear.

PRODUCT FEATURES

- Forced cooling
- Communication interfaces: Ethernet, MVB or CAN bus
- Flexible installation (roof or underfloor)
- Comprehensive service software
- Modular system architecture with a broad range of pre-defined options

POWERBRIX – SUPERIOR PERFORMANCE

Example: In 750 V DC, Out 55 kVA AC / 12 kW DC

	Old Generation (Si)	PowerBriX (SiC)	
Size (mm)	1600 x 650 x 450	1395 x 550 x 400	
Volumen	468 dm ³	307 dm ³	- 34 %
Weight	262 kg	186 kg	- 29 %
Power/vol.	134 W/dm ³	205 W/dm ³	+ 52 %
Power/wgt.	240 W/kg	338 W/kg	+ 41 %

CUSTOMER BENEFITS

- Compact, weight-optimized design
- High energy efficiency
- Flexible, rapid configuration to meet specific customer requirements
- Reduced efforts in project planning and configuration
- Lower technical project risk
- Easy maintenance for reduced LCC and increased train availability
- Enhanced passenger comfort thanks to reduced audible noise



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