

ABB LV Power Converter Solutions

PCS100 SFC, 125 kVA to 10 MVA

Static Frequency Converter

Product Brochure



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Product overview

The PCS100 SFC allows connection of 60 Hz powered equipment to a 50 Hz supply network and 50 Hz powered equipment to a 60 Hz supply network. Additionally the PCS100 SFC can convert the supply voltage to a different voltage to match the requirement of the load.

How it works

The system is constructed of multiple power electronic modules and functions by converting the input AC power through a sine-wave rectifier to a DC link and then through an AC sine-wave inverter to produce a clean, full sine-wave output at the new frequency and voltage.

The PCS100 SFC is extremely flexible with regard to paralleling with other voltage sources, either other generators or multiple SFC units. Parallel load sharing is achieved using frequency and voltage droop profiles programmed into the converter. This allows the converters to share power with other systems without the need for any additional communication signals.

Starting the SFC into the live bus is greatly simplified due to the automatic output synchronisation feature. This enables a full seamless transfer from generator supply to SFC supply on the output bus. If the output bus is dead when the SFC is given a start command it will ramp up the voltage over one second, providing a soft energising of the output.

Typical applications

- 50 to 60 Hz or 60 to 50 Hz industrial applications
- Dockside converter allows generators to be turned off while at port to save fuel and eliminate pollution
- Replacement of motor generator sets
- As a clean power supply to isolate an unstable grid from a critical load



2 Product Brochure | PCS100 SFC Static Frequency Converter

User benefits

- Minimise operating and maintenance costs
- High reliability provides maximum power availability
- Keeps equipment running through utility voltage sags and frequency variation

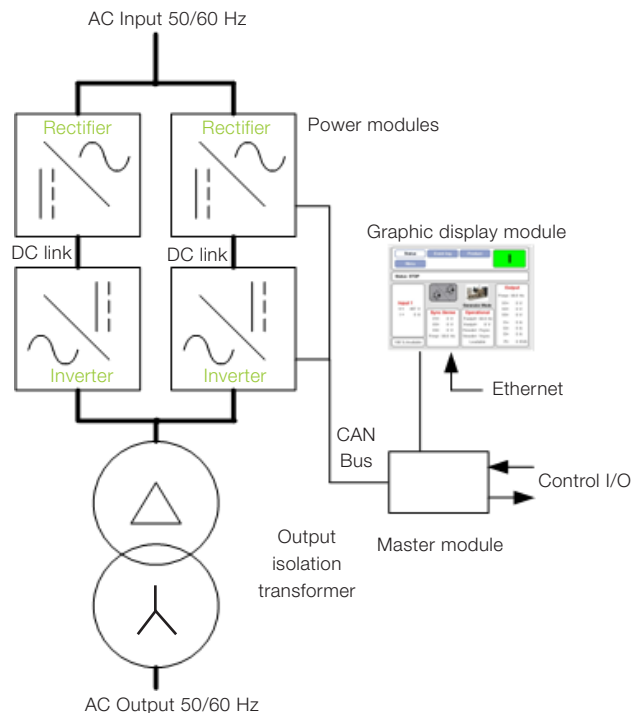
Features

- High efficiency power conversion
- Clean sinewave output voltage
- Unity power factor, sinewave, active rectifier design
- Built-in module redundancy without interruption of operation
- Fully isolated AC connection using an output transformer
- Wide range of voltages available; 50 Hz and 60 Hz
- Small footprint design
- Touch screen colour graphic display (GDM)
- Internal web server and Modbus TCP allows remote monitoring
- Output cable voltage drop compensation
- Seamless generator change over standard (synchronization)
- Generator emulation and load sharing

What makes PCS100 SFC better than alternative solutions

- N+1 modular redundancy for mission critical applications
- Lowest Total Cost of Ownership
- Minimal spares required
- Easy paralleling to other voltage sources using droop

Single line diagram



Complete grid interconnection

ABB PCS100 SFC Frequency Converters are commonly used to interconnect 50 Hz and 60 Hz systems.

The power converter system's flexibility allows a wide range of applications, such as:

- Interconnection of ships at berth to the electricity grids (conversion of frequency and stabilization of port electricity grid)
- Special industrial applications

Examples of applications



Plant relocation

PCS100 SFCs can be tailored not only for port and marine solutions, but can also be designed to support major transportation projects. For example a PCS100 SFC supported a textile company's relocation from Italy to Mexico.



Onboard vessels

Two SFCs conditioning power from the onboard shaft generator to allow 35-65 Hz operation.



Industrial applications - FPSO

Floating platform storage and offloading (FPSO) operations are typical for the oil and gas industry. ABB have delivered systems worldwide such as, Armada D1 (previously known as the Monte Umbe vessel), and NKOSSA II off the coast of the Congo, containing a 3300 kVA PCS100 SFC.



Shore-to-ship (ports and shipyards)

Being the Official Supplier to Emirates Team New Zealand (ETNZ) 2013, ABB supplied a PCS100 SFC during the Louis Vuitton Cup and the America's Cup. ABB have supplied many PCS100 SFCs for shore-to-ship (S2S) applications, mostly in the range of 800–2000 kVA, however have supplied up to 8 MVA. Multiple units are often installed allowing them to be paralleled or used individually.

PCS100 SFC Static Frequency Converter | Product Brochure 3



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