

ABB low voltage wind turbine converters ACS800-67, 0.6 to 2.2 MW

ABB low voltage wind turbine converters for doubly-fed wind turbines are a proven and reliable solution for turbine manufacturers.



In the doubly-fed concept, the generator's rotor windings are connected to a converter, and the generator's stator is directly connected to the grid. ABB wind turbine converters are used to control generator speed and power factor, allowing a wider power production speed range as well as the ability to feed reactive power to support the grid.

Fast control

ABB converters use direct torque control (DTC) to monitor the generator's torque 40,000 times per second. This provides the foundation for grid code support and fault ride-through. DTC ensures immediate reaction and control to keep the generator operating within safe parameters.

Everything's inside

All of the components of the converter are located inside the cabinet, ensuring that no extra space is needed for accessory equipment. The cabinet has an IP54 degree of protection, and a height of only 1,800 mm.

Global product

The converters are designed as global products. This means that the same quality standards for both materials and production are used, regardless of where the converter is manufactured. A global manufacturing footprint and volume production support customers around the world.

Global life cycle service

Designed for long life and easy maintenance, the converters are supported by a complete offering of ABB life cycle services. These include pre-purchase engineering, training, spare part management, and preventive maintenance plans. Together, these services help turbine manufacturers and wind power plant operators produce more kilowatt-hours over the life time of the turbine.

Startup and operation

ABB includes a PC tool and Ethernet adapter used for the commissioning and tuning of the wind turbine converter. The PC tool allows the operator to monitor converter operation over an Ethernet connection.

Power cabinet option

An optional power cabinet includes the stator contactor and stator breaker, providing a tested and coordinated solution to help increase the turbine's life time kilowatt-hour production. ABB breakers are used for protection, and ABB contactors are used for switching. This combination enables optimum use of low wind speeds.

Highlights:

- Nacelle or tower installation
- IP54 cabinets with all components installed inside the cabinet
- Grid side contactor and breaker for safe connection and disconnection
- IGBT power modules with integrated DC capacitors
- Direct torque control
- Very low total harmonic distortion
- Global service
- Global manufacturing
- Cabinet height 1,800 mm



Technical data

Converter type	Converter for doubly-fed induction generator (DFIG)
Generator power range	900 kW to 2.2 MW
Cooling	Air cooling with enclosed cabinet
Control principle	Direct torque control (DTC)

Electrical data

Rated grid voltage	525 to 690 V AC, 3-phase, $\pm 10\%$
Rated generator voltage	According to generator, up to 12 kV
Nominal frequency	50 \pm 3 Hz / 60 \pm 3 Hz
Rotor connection	3-phase symmetrical AC, 0 to max 750 V Frequency 0 to 100 Hz
Efficiency at converter's rated point	Approximately 98%
Generator side du/dt	1,000 to 1,400 V/ μ s
Grid harmonics	Max 3%
Total harmonic current distortion (n = 2 to 40)	with DFIG generator current

Environmental limits

Ambient temperature	Transport -40 to +70 °C Storage -40 to +70 °C Operation -30 to +40 °C
Optional high ambient temperature	Up to +50 °C
Altitude	0 to 1,000 m
Optional high altitude	Up to 4,000 m
Degree of protection	IP54R / UL type 12 with air outlet duct IP23
Cabling connections	Bottom

Power cabinet

Devices	Stator contactor Stator breaker
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Control

Fieldbus interface	PROFIBUS-DP, CANopen, Modbus, ControlNet, Interbus-S, DeviceNet
Ethernet interface	Ethernet interface with PC browser is included
Control tool link	Optical DDCS communication link for communication with PC tools as standard

Product compliance

Product markings	CE UL Classified with IEC standard 61400-1
EMC	EN 61800-3/ A11 (2000), EN 61800-3 (2004)
Quality assurance system	ISO 9001
Environmental system	ISO 14001

Converter supports wind turbine to comply with grid code requirements

Transmission code 2007, Germany	FRT Grid support*
REE P.O. 12.3, Spain	FRT Grid support*
Technical regulations TF 3.2.6, Denmark	FRT ***
National Grid Electricity Transmission, Issue 3, Revision 21, July 2007, USA	FRT Grid support* Active current/power**
111 FERC 61,252	FRT
111 FERC 61,353, USA	***
CEPRI WED-QR-C01-E-06, China	FRT ***

* When $U_{dip} > 20\% U_n$

** With symmetrical fault when $U_{dip} > 50\% U_n$

*** Grid code does not require grid support

FRT = fault ride-through

Converter options

- Removable cabinet doors
- Cabling direction
- Power cabinet options

ACS800-67 ratings

Typical generator rating	Rated generator current	Rated grid current	Rated grid apparent power	Module setup	Typical cabinet width with 690 V power cabinet mm	Cabinet weight with power cabinet kg	Type designation ACS800-67
kW	A	A	kVA				
1,000	486	400	478	1 + 1	2,200	1,800	-0480/0580-7
1,500	645	400	478	1 + 2	2,500	1,900	-0480/0770-7
2,200	953	400	478	1 + 2	2,500	1,900	-0480/1160-7

Cabinet height 1,800 x depth 600 mm

For more information please contact:

www.abb.com/windpower

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