Intelligent power conversion to drive the energy transition

Highlights

- > Unrivalled power density for 1500 VDC applications
- > Efficient silicon carbide (SiC) technology
- > Robust in harsh conditions
- > Ultra-low losses to air
- > Modular, scalable and serviceable
- > Highest quality and reliability based on IATF 16949 automotive quality standards
- > Supported by DrivePro® services for global service capability
- > Cybersecure according to IEC 62443-4-2 Level SL-C-2

99.2%
Euro efficiency

The iC7-Hybrid 1500 VDC Liquid-cooled Grid Converter is the ideal solution when superior power density and efficiency are preferred. It is built in a robust aluminum frame protecting sensitive electronics against environmental conditions and vibration. True liquid-cooled design ensures minimal losses to air.

An IP00 system module offering enables you to add local value in the system integration instead of turn-key solution.

Feature	Benefit
Extensive simulation model offering for grid integration studies	Smooth grid connection process
Developed using FMI-compatible model-based design	Easy to integrate into your simulation platform. Each simulation model is a true digital twin and always up-to-date
Grid-forming with 20 years of experience	Flexibility for on-grid and off-grid applications with same converter
Superior control performance and fast control loops	Meets the requirements of the modern low-inertia networks
Cybersecure by design	Cybersecure according to IEC 62443-4-2 Level SL-C-2

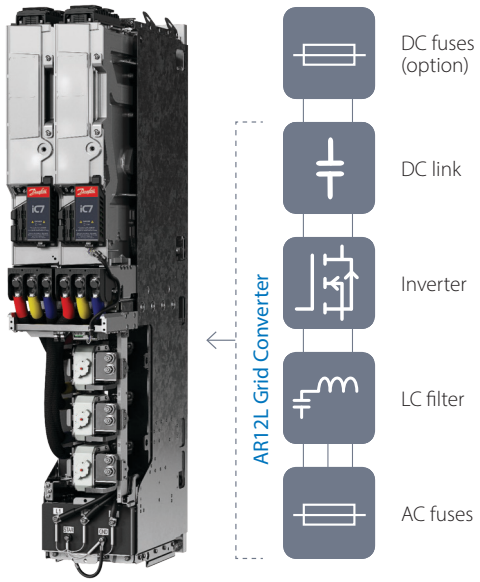
iC7-Hybrid takes power conversion performance to the next level in:

- Energy storage
- Hydrogen electrolyzer power supply
- Shore power supply
- Ultra-fast charging

Global presence:
Secure your supply chain with our local, carbon-neutral production

Learn more about iC7-Hybrid

iC7-Hybrid 1500 VDC Liquid-cooled Grid Converter – the ultimate in power density



3.24 kW/L

2.3 MVA Grid Converter
with LC filter in
600 x 600 x 2000 mm enclosure

Illustrations not to scale

Key specifications

Ratings	
Voltage range	3 x 380-690 V AC (-15+10%) 500-1500 V DC
Current range	1000-7600 A AR12L-8xAR12L
DC current range	1180-8777 A
Power range	1196-9083 kVA
Euro efficiency at 1250 V DC	99.2%
Temperature of cooling agent	-10 to +45 °C at (I_N)(nominal), up to 60 °C with derating
Ambient operating temperature	-15 °C (no frost) to +50 °C (at I_N), up to +60 °C with derating
Environmental conditions	
Protection rating drive modules	IP00/UL Open Type; (IP55 protected power electronics)
Dimensions (W x H x D)	235 x 1295 x 566 mm (excluding DC-fuses)
Weight	230 kg
Noise level	SPL: 62 dBA 1 m in a reference cabinet, SWL: 67 dBA
Maximum altitude	2000 m
THDi	<3%
Grid connection type	IT grid, 3-phase. TN-S, TN-C [1]
EMC	
EMC Immunity	IEC/EN 61000-6-2
EMC emissions	CISPR 11 (EN 55011) Class A
Safety	IEC-62477-1
Grid codes	EN 50549-1:2019 [1], EN 50549-2:2019 [1] and EN 50549-10:2022 [1] VDE-AR-N 4110, VDE-AR-N 4120, and VDE-AR-N 4130 ENTSO-e (Regulation 2016/631) [1], UL1741SB [1], CSA 22.3 no. 9 [1]
Cybersecurity compliance	Product certification IEC 62443-4-2, with Security Level Capability 2 (SL-C 2) Product development process IEC 62443-4-1

[1] *Pending*

Intelligent grid control for modern low-inertia grids

	Operating modes	Functions
GFL Grid-following	• Power control • DC voltage control • DC current control	• Power dispatch • Power factor control • Anti-islanding detection
GFM Grid-forming	• Island • Droop control • Droop control with base load • Power control	• Synthetic inertia • Virtual synchronous generator (VSG) • Oscillation damping • Stable operation at low SCR • Black start • Primary frequency control • Voltage regulation • Power dispatch

Supporting features

- Active power functions P(f), Frequence Sensitive Mode
- Reactive power functions Q(U), Q(P)
- Fault ride through with reactive current injection
- Seamless transition between Grid-following and Grid-forming
- Synchronization to external grid (2 x 3-phase external voltage measurement)
- Microgrid voltage harmonics compensation
- Short circuit current injection (GFM only)
- Customizable fieldbus interface (Modbus TCP, PROFINET RT, EtherNet/IP, EtherCAT)
- Operation at reduced power in the event that one of the power units is out of operation

iC7-Hybrid supports these functional extensions:

- I/O and relay option
- Temperature measurement option
- 2 x 3-phase voltage measurement option

MyDrive® Virtual simulation models reduce time to market

Remove constraints of the physical environment.

FMU models of Grid Converter, DC/DC Converter and Generator application are available for system simulation.

MyDrive® Virtual

fmi Functional Mock-Up Interface

Simulation models for grid connection studies

Danfoss provides a wide range of simulation models to ensure a smooth grid connection process.

- PSS/E RMS model
- PSCAD EMT models
- DIgSILENT PowerFactory EMT and RMS models

Discover more simulation offerings

Explore our solutions
danfoss.com

Your ambition. Our drive. Meet iC7 series

iC7-Automation | iC7-Marine | iC7-Hybrid | iC7-HVACR | iC7-Aqua

Imagine versatile and highly secure motor control and power conversion. The iC7 series puts this capability securely in your hands. Intensely powerful and compact variable frequency drives and converters built to optimize a vast range of systems, while giving you the flexibility to distribute intelligence the way you want.
Paving the way for new ambitions, where intelligent, efficient, and connected systems are the new reality.

Some functionalities listed in this fact sheet are for future implementation

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