

*Danfoss*

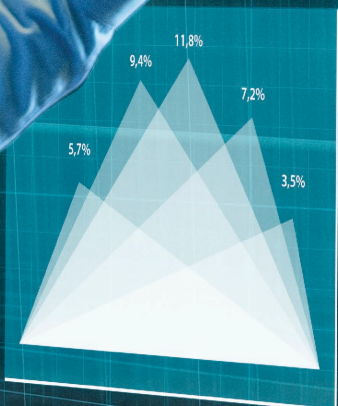
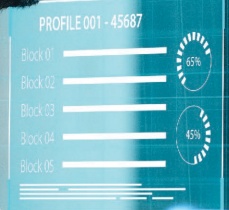
ENGINEERING  
TOMORROW

Brochure | iC7-Automation

# Need **flexibility** to **create** more **competitive systems**?

## Intelligence

to empower your  
applications




INTELLIGENCE  
ON






# iC7-Automation highlights

- Integrated Industrial IoT security
- Precision motor control
- Modular control architecture
- High power density with a small footprint
- Efficient cooling management
- Fast and efficient system integration

 [Explore the specifications](#)

## Contents

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-  [iC7-Automation variants](#)

For specifications and dimensions, refer to the iC7-Automation Selection Guide 





# Need **flexibility** to **create** more **competitive systems**?

The iC7 series of intelligent AC drives puts the power of compactness and integrated intelligence in your hands, so you can boost machine performance in new ways.

With the best heat management available anywhere, this drive delivers high torque performance in a small footprint, so you can get much more power into small spaces.

Integrated intelligence enables the drive to function as your most powerful sensor, meaning you can regulate your process highly efficiently, saving money with fewer external devices. For quick and trouble-free system integration the drives come with built-in EMC and harmonic filters. Enjoy superior EMC performance even for installations with long motor cables.

Manage your process data in the cloud or your internal network with world-class stringent security. The drive supports OPC-UA for cybersecure connection to cloud, get full data traceability with end-to-end integrated digitized quality control throughout the drive lifetime – from design and testing, to installation and service.

iC7 series intelligently serves demanding applications in food and beverage industries, including:

- Bottle sorters and washers
- High-speed cutters
- Centrifuges and decanters
- Dosing pumps and mixers
- Palletizers and packers

These drives also support heavy-duty applications such as

- Air compressors
- High-power pumps and fans
- Cranes and hoists
- Mixers
- Extruders
- Tunnel boring machines
- Progressive cavity pumps
- Electric submersible pumps
- Beam pumps and mud pumps
- Top drives
- Rotary tables
- Drawwork





## CRYPTO CHIP



### Secure-by-design

Your drive is equipped with market-leading hardware-based protection against unauthorized access with a built-in crypto chip on the control unit.

The drive supports OPC UA with no need for additional hardware. This capability is a key enabler for cybersecure Industrial IoT, permitting secure communication via direct cloud connection.

-  **Security**
-  **Security video**

### Functional safety to match your needs

STO and SS1-t SIL3, PI e as standard makes certification easier. A flexible offering allows the addition of functional safety via fieldbus, as required. PROFIsafe is the first of these protocols available, with more to come.

Enclosed drives are equipped with emergency stop button on the door, to activate STO.

### User interfaces

A new range of user interfaces integrate well-known features and functionality. Integration of features in MyDrive® tools is supported.

**Halo indicator**  
Normal = white  
Fault = red  
Warning = orange





## More built-in sensors for enhanced control

The iC7 drive has an increased number of built-in sensors. This enables improved control performance, increased protection of application and drive, and capability to support Industrial IoT solutions.

## Superior sensorless control

In open or closed loop, the iC7 drive delivers superior shaft performance even at low speed.

New motor? There's no need to change out the drive. Connect the motor and this drive will automatically self-tune and optimize: induction motor (IM), permanent magnet motor (PM), or high-efficiency synchronous reluctance motor (SynRM).

-  **Motor Control**
-  **Motor Control video**

## Filters and accessories

For a complete installation, a range of integrated and separate filter options are available.

-  **Filters**

## Engineering support

Danfoss provides an extensive selection of support material and tools to help in engineering, such as:

- Digital tools, such as MyDrive® Select, MyDrive® Harmonics and MyDrive® ecoSmart™
- EPLAN P8 macros
- Dimensional and electrical drawings

## Simulation reduces time to market

Remove the constraints of the physical environment and open up new opportunities using iC7 simulation models which perfectly mirror the converter or drive.

You can predict performance, test scenarios, streamline commissioning, and collaborate across teams and locations in an open environment.

Reliably validate interoperability of systems, using high-fidelity hardware-in-the-loop (HIL) simulation support from Danfoss.

The iC7 platform is founded on model-based design, which ensures the simulation models are always valid: up to date and accurate.

These models comply with the FMI standard and are easy to integrate in your simulation platform.

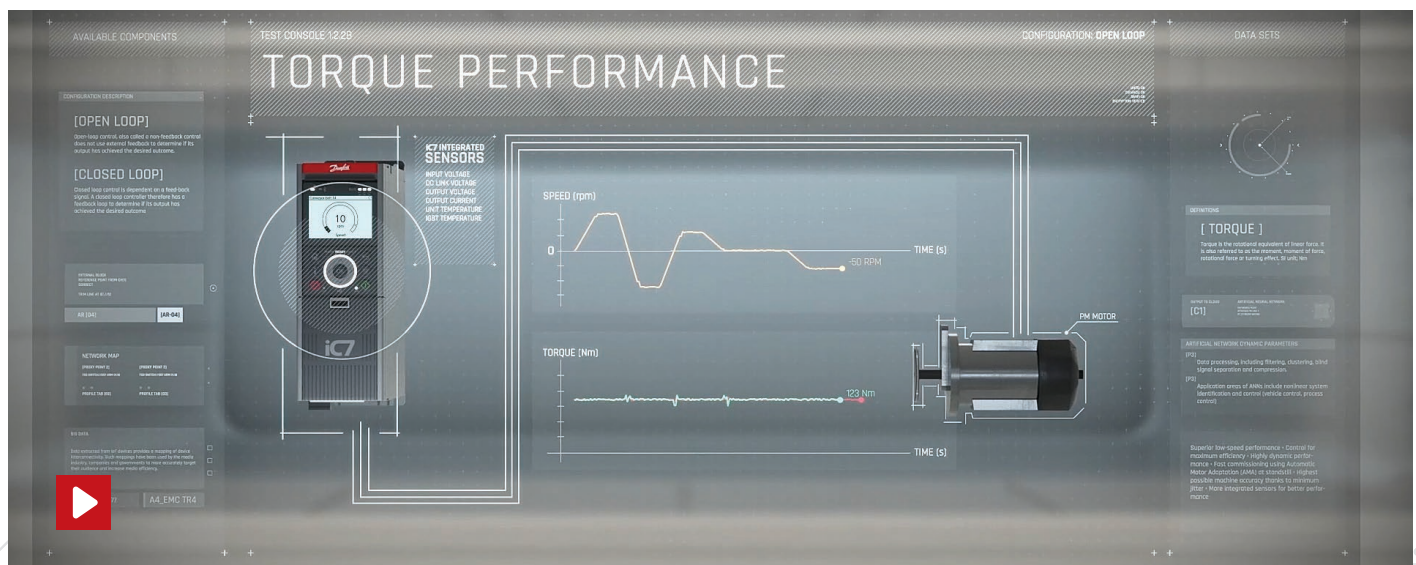


-  **MyDrive® Simulation**
-  **MyDrive® Virtual**
-  **MyDrive® HIL**

## Supported by MyDrive® tools

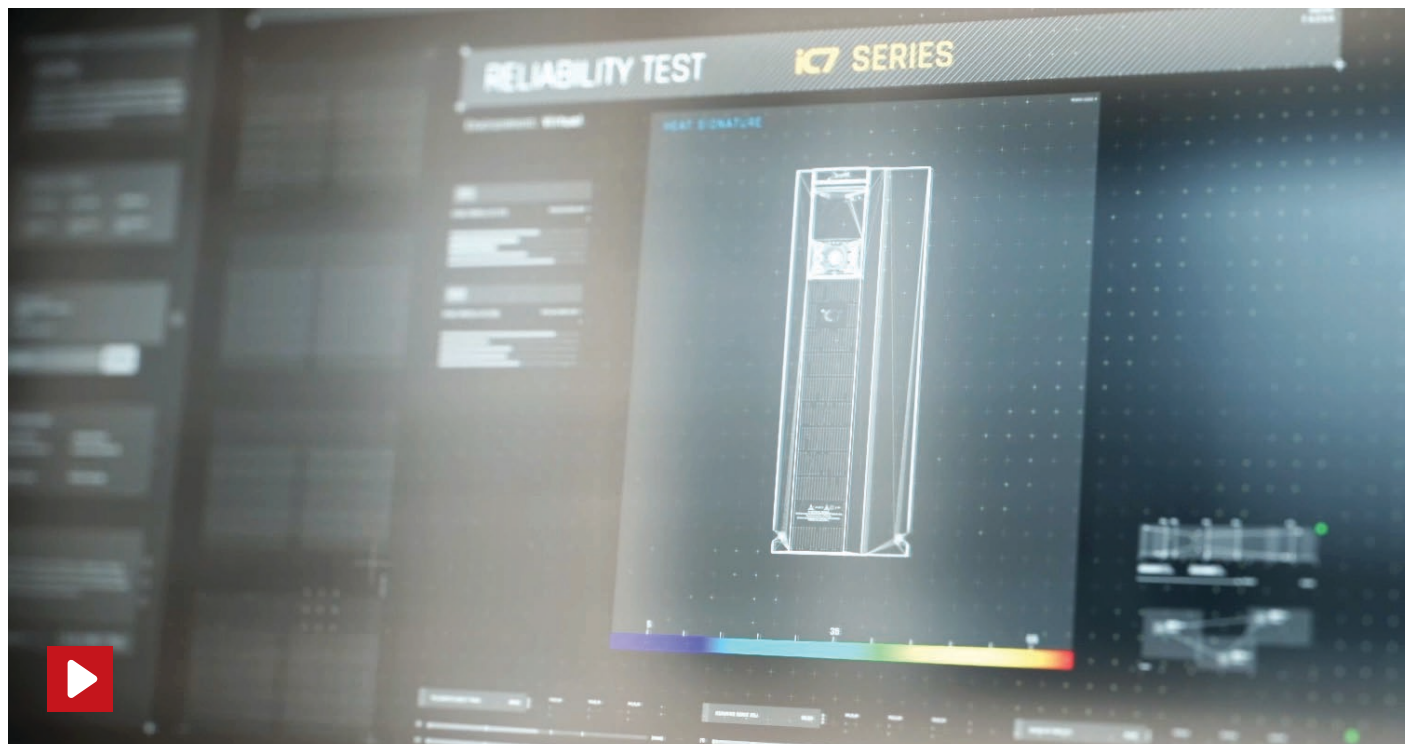
You can use MyDrive® tools on the device of your choice, supporting the entire lifecycle of the iC7 drive; from selection and dimensioning, through programming and commissioning, to maintenance and support during operation.

-  **MyDrive® Insight**



What if sensorless open loop performance could match closed loop?





### Quality in focus

Reliable and predictable operation has been a key driver. With an ISO 9001-certified and IATF 16949-compliant quality system combined with use of 6-Sigma principles, quality and reliability are at absolute market-leading standards.

Reliability is assured by design based on application load profiles and data collected from intensive simulations and feedback from testing.

Automated assembly enables close control and monitoring of critical processes. The finished drives are 100% full-load tested ensuring reliability before leaving the factory.

### ▶ Quality video

### Scalable and flexible control

Enjoy a new level of performance thanks to the rapid-response control of iC7 drives.

The control capability is scalable and equipped with EtherNet-based fieldbus and STO inputs as standard. Add more I/Os as needed, to match your applications.

For frequency converters, an optional basic I/O board offers typical I/O connectivity, and if more is needed, then you can add up to 4 options (for enclosed drives, add up to 6 options).

For air-cooled system modules, an expandable bus includes I/O, fieldbus, and expanded safety options. There is space for up to 10 control options.

Configure fieldbus protocol from the factory: Modbus TCP, PROFINET, Ethernet/IP, and PROFIsafe.

### Switch fieldbus without changing boards

Change fieldbus in the field, simply using a license key. There is no need to change out boards. These protocols are available for activation by license key: PROFINET RT, Modbus TCP, EtherNet/IP, EtherCAT and OPC UA.

Connect to a computer via the extra Ethernet port, enabling you to use MyDrive® commissioning or service tools.












# Features to **enhance competitiveness**



Feature	Benefit
Secure-by-design	Reduce risk of downtime due to unauthorized access
Integrated Ethernet communication interfaces	Save costs and time in installation
STO and SS1-t SIL 3, PL e as standard. Emergency	
PROFIsafe and Ethernet IP protocols are integrated, activated by license key	Save time: no need to change hardware
High number of integrated sensors	Improve performance and control accuracy
Highly accurate motor control	Save costs and improve performance
Modular control architecture	Improve performance by adapting to your application's needs
High power density	Save space and reduce cooling costs
Compact side-by-side mounting	Save space and reduce installation costs

Ensuring you shine in the marketplace is our goal. Learn how Danfoss supports your success [here](#) 





## Application software – **for a perfect match**



### **Industry application**

Designed for maximum machine performance and flexibility, the Industry application is the versatile choice for all applications requiring high-performance speed and torque control. Furthermore, it focuses on the control of external control loops: an advanced process controller enables full auto tuning.

### **Common features of both applications**

- High-performance open- and closed loop motor control with advanced automatic motor adaptation
- Wide range of customization, from signal naming to application software modifications.

 [Read more about applications](#)



### **Motion application**

Choose the Motion application to achieve optimal performance for single-axis linear or rotary positioning and synchronization tasks.

It gives you:

- Absolute and relative positioning
- Position synchronization
- Multiple types of Homing
- Superimposed movement
- Touch Probe functionality
- Scaling and use of physical units
- Easy to order and activate: simply enter the license key



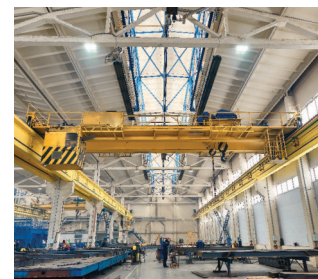




### Active Front-end application

The Active Front-end application ensures a stable DC-bus for inverter modules, as well as effortless interaction with the grid, even in less-than-ideal grid conditions. It is designed for grid compliance and establishes grid-friendly harmonic content. It also safeguards energy recovery back to grid when excess energy from the process is available. It delivers robust control which is easy to customize and commission, with quick start-up and parametrization using wizards.

- Robust DC-link regulation
- Ultra-low harmonic current distortion THDi
- Unity power factor
- Support for grid voltage feedback option
- Power and current limitation
- Automatic AC-grid synchronization





# iC7-Automation **variants**

iC7-Automation is available in several variants to suit a broad range of applications:

- Frequency converters – optimized for wall-mounted, cabinet-mounted or free-standing installation
- Air-cooled system modules – ideal for ultra-compact cabinet integration
- Enclosed drives – optimized for minimal footprint and ease of serviceability



iC7-Automation	Frequency converters	Air-cooled system modules	Enclosed drives
<b>Voltage</b>	3 x 380-500 V AC -15%/+10%	380-500 V AC -15%/+10%	3 x 380-500 V AC -15%/+10%
<b>Output current</b>	1.3-1260 A	385-4870 A	206-1710 A
<b>Protection rating</b>	IP 20, UL Open Type IP21, UL Type 1 IP54, UL Type 12	IP00, UL Open Type	IP21, IP54

For specifications, dimensions, and a key to the model code, refer to the iC7-Automation Selection Guide [↗](#)





# MyDrive® Suite – Digital tools empower you

Need help to design your application, or select, set up, and maintain your drive? Danfoss provides a palette of digital tools to give you the information you need, at your fingertips. No matter which stage of the project you are at.

## Select and dimension your drives

- Select the right AC drive based on motor and load characteristics
- Find general product, industry, and application information for drives from Danfoss

### MyDrive® Select

Select and dimension your drive and motor based on calculated motor load currents as well as current, temperature and ambient limitations. MyDrive® Select matches your business needs with Danfoss Drives products.

### MyDrive® Portfolio

This smart device app gives you a full overview of all Danfoss Drives products and their documentation.

## Set up and service your drives

- Set up your drives to operate according to your requirements
- Monitor drive performance throughout the entire lifecycle of your drive

### MyDrive® Insight

Get easy access to parametrize your Danfoss AC drives or power converters, locally or remotely. Use MyDrive® Insight for commissioning, monitoring, and troubleshooting.

## Validate performance of your drives

- Analyze the performance of your drives in relation to harmonics content
- Calculate the energy savings to be achieved when using drives
- Validate compliance to norms and standards

### MyDrive® Harmonics

Estimate the benefits of adding harmonic mitigation solutions from the Danfoss product portfolio and calculate predicted system harmonic distortion. This tool provides a quick indication of installation compliance with the most recognized harmonic norms, and mitigation recommendations.

### MyDrive® Energy

Estimate the energy savings and CO<sub>2</sub> reduction achievable by installing Danfoss drives to perform variable speed control of electric motors. Calculate efficiency class and part load efficiency for drives from Danfoss. MyDrive® Energy supersedes the tools MyDrive® ecoSmart and VLT® EnergyBox.

### MyDrive® Simulation

MyDrive® Simulation is an online simulation tool for iC7 series drives and power converters. Create, run and analyze simulations in an intuitive and collaborative environment with no need to download and install software.



## DrivePro® Services

Delivering a customized service experience!



Every AC drive application is different. DrivePro® Services is a collection of **tailor-made products designed around your needs.**

From optimized spare part packages to condition-monitoring solutions, we deliver customized service offerings to **support your business through the different lifecycle stages of your AC drive.**





## DrivePro® Site Assessment

Optimize your maintenance strategy with a complete onsite survey and risk analysis of all your AC drives collected in one detailed report. Together with a Danfoss expert, you can build a tailored plan for future maintenance, retrofits, and upgrades.



## DrivePro® Spare Parts

Maximize uptime and maintain peak performance throughout the lifetime of your AC drives with DrivePro® Spare Parts by making sure you are equipped with the original spare parts from Danfoss Drives.



## DrivePro® Extended Warranty

Even the best performing AC drives need protection. DrivePro® Extended Warranty offers a wide range of warranty options and provides the longest coverage in the industry up to 72 months.



## DrivePro® Start-up

DrivePro® Start-up includes a full range of operating health checks and parameters adjustments. Based on a manufacturer's commissioning checklist, our experts will inspect and test your AC drive and its motor performance to ensure the best configuration of your AC drives.



## DrivePro® Exchange

Maintain uptime with a fast alternative to repair when there is a time critical situation. If an AC drive fails, the DrivePro® Exchange service can quickly exchange any AC drive to a new unit of the same type to ensure as little production delay as possible.\*

\* DrivePro® Exchange is available for iC7-Automation Frequency Converter only

To learn which products are available in your region, please reach out to your local Danfoss Drives sales office or visit our website.



Read more  
about DrivePro®



Local  
contacts





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Imagine versatile and highly secure power conversion and motor control.  
Intensely powerful and compact converters and drives built to optimize a vast range  
of systems while giving you the flexibility to distribute intelligence the way you want.  
Paving the way for a new dimension, where open, connected and intelligent  
systems are the new reality.



 **Open up a new dimension with iC7 series**  
iC7-Automation | iC7-Marine | iC7-Hybrid

**Contact us** 

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