Need flexible VFDs to create more competitive systems?

Intelligent drives to empower your applications



iC7-Automation highlights

- Integrated Industrial IoT security with OPC UA
- Precision motor control
- Modular control architecture
- High power density with a small footprint
- Efficient cooling management
- Fast and efficient system integration
- Modular concept for design flexibility
- Integrated synchronization and positioning functionality
- Easy-to-use logic blocks and states offer unprecedented flexibility beyond parametrization

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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.

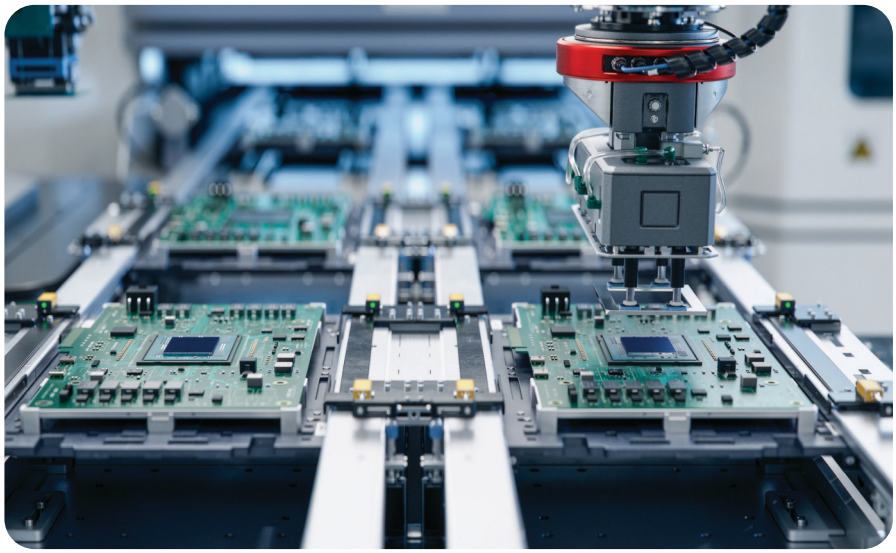
iC7 series intelligently serves demanding applications in food and beverage industries, including:
- Bottle sorters and washers
- High-speed cutters
- Centrifuges and decanters
- Dosing pumps and mixers
- Palletizers and packers
- And many more

These drives also support heavy-duty applications such as
- Tunnel boring machines
- Crushers
- Cranes and hoists
- Mixers
- Extruders
- Air compressors
- High-power pumps and fans
- Progressive cavity pumps
- Electric submersible pumps
- Beam pumps and mud pumps
- Top drives
- Rotary tables
- Drawwork
- Many more applications

iC7-Automation is also ideal for pumps and fans with low overload requirements, making it a versatile choice beyond high-torque applications.

This makes it well suited for a wide range of applications across heavy industries such as mining, and metals. This enables you to confidently specify iC7-Automation for more than just the most demanding loads.







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.

iC7-Automation is also designed to meet modern industrial cybersecurity requirements, aligned with IEC 62443-4-2 SL2.

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

Security

Functional safety to match your needs

STO SIL3, PL e is included as standard, making TÜV-certification easier. For frequency converters, additional functions such as SS1-t can be added via fieldbus for enhanced safety – with PROFIsafe as the first available protocol, with more to come. For system modules, SS1-t SIL3, Pl e is included as standard, giving you built-in flexibility and compliance from the start.

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

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 set-up and control is intuitive and easy.

Motor Control

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® Energy
- EPLAN P8 macros
- Dimensional and electrical drawings

MyDrive® Select
MyDrive® Harmonics
MyDrive® Energy

Simulation

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.

fmi Functional Mock-Up Interface

MyDrive® Virtual
MyDrive® HIL

Read more about simulation

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.

Scalable and flexible control

Achieve high performance with fast-response control and a scalable architecture designed to fit your application.

iC7-Automation comes with EtherNet-based fieldbus and STO as standard, with the flexibility to expand I/O, safety, and communication options as needed. Add up to 4 options (6 for enclosed drives), or up to 10 control options for system modules.

Multiple fieldbus protocols can be configured from the factory and easily changed later without additional hardware. This gives you maximum flexibility.

136S1100 Motion (OS701)[1]
136S1002 PROFINET RT (OS7PR)
136S1004 Modbus/TCP (OS7MT)
136S1003 EtherNet/IP (OS7IP)
136S1005 EtherCAT (OS7EC)
136S1006 OPC UA (OS7UC)

[1] *Frequency converters and enclosed drives only*



Features to enhance competitiveness



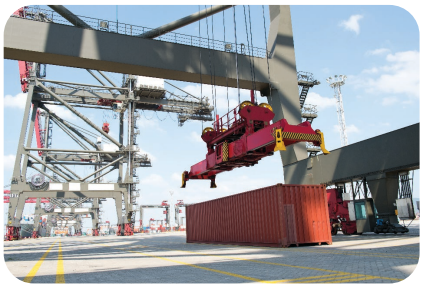
Feature	Benefit
Secure-by-design	Reduce risk of downtime due to unauthorized access
Integrated Ethernet communication interfaces	Save costs and time in installation
STO and SS1-t SIL 3, PL e as standard	Save costs and time in installation
Fieldbus compatibility includes EtherCAT, Modbus TCP, OPC UA, PROFINET RT, and EtherNet/IP. Switch easily between protocols using a license key	Extremely fast and secure communication with no need to exchange 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 integrated Industry tasks 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.

Industry application is always available in the drive. No license key required.

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
- 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

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.

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
- Power and current limitation
- Automatic AC-grid synchronization

Non-regenerative front-end application

The non-regenerative front-end (NFE) application ensures a one-way power supply for motor drives. It ensures a stable DC-link voltage for efficient operation, with power flowing from the grid to the DC bus. It includes an AC choke for reduced harmonics and an integrated pre-charging function.

- Cost-effective
- Reliable DC supply
- Reduced harmonics
- Safe pre-charging
- Compact design
- Easy installation
- Lower costs

Read more about applications

iC7-Automation variants

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

- 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 use and serviceability



iC7-Automation	Frequency converters	Air-cooled system modules		Enclosed drives
Voltage	3 x 380-500 V AC -15%/+10%	380-500 V AC -15%/+10%	525-690 V AC -15%/+10%	3 x 380-500 V AC -15%/+10%
Output current	1.3-1260 A	385-4870 A	261-4720 A	206-2510 A
Protection rating	IP20, UL Open Type IP21, UL Type 1 IP54, UL Type 12	IP00, UL Open Type		IP21, IP54

Danfoss FlexConcept® – quicker and more cost effective

The Danfoss FlexConcept® helps system designers and operators reduce system complexity while improving energy efficiency and operational performance.

By combining optimized drive technology with high-efficiency motors such as VLT® OneGearDrive® and the powerful iC7-Automation platform, FlexConcept® enables cost-effective conveyor and automation solutions with fewer components and reduced lifecycle costs.

The concept focuses on high efficiency, flexibility, and reduced system complexity, helping customers optimize installation, commissioning, maintenance, and operation.



4 points of cost optimization

High efficiency
All the drives used in the Danfoss FlexConcept® stand out for their high level of efficiency and energy savings. The ultra premium efficient PM motor meets the highest efficiency class defined in IEC TS 60034-30-2 in a smaller frame size than current induction motors. Efficiency is maximized in the system as a whole by the matched design of the motors and the drives.

Fewer variants
Conveyor solutions can be offered with a vastly reduced number of variants by careful motor selection and optimal AC drive adoption, even in large systems.

This in turn affords a smaller spare parts inventory, particularly for larger systems, along with reduced storage costs and faster component availability compared to current standard drive solutions.

Lower training and maintenance costs
Training expenditure and maintenance staff requirements are greatly reduced by the unified operating design and standard operating scope of drives from Danfoss, in addition to the simple connection of the VLT® OneGearDrive® Hygienic drive motors via stainless steel connectors.

Flexibility
Easily and reliably combine components with existing solutions from other manufacturers.

The open system architecture of the Danfoss FlexConcept® means that standard, geared and PM motors can all be controlled and operated at high efficiency by Danfoss drives.

MyDrive® Suite – Digital tools empower you

Need help to design your application, or select, set up, and maintain your drive? Danfoss provides a pallette 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 drive based on motor and load characteristics
- Find general product, industry, and application information for drives from Danfoss

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

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

Learn more about digital tools for iC7 series

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 inverter 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.

fmi Functional Mock-Up Interface





DrivePro® Services

Delivering a customized service experience!

Every VFD 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® 360Live

Achieve excellence with precision of maintenance
An installed base management solution to register and effectively optimize drives maintenance.

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® 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® 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® 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® 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

Learn more about iC7-Automation

Frequency Converters

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 by reducing external devices.

For quick and trouble-free system integration the frequency converter comes with built-in EMC and harmonic filters.

Manage your process data in the cloud or your internal network with world-class stringent security.

You get full data traceability with end-to-end integrated digitized quality control throughout the drive lifetime from design and testing through to installation and service.

Frequency converters in the iC7 series are optimized for wall-mounted, cabinet-mounted or free-standing installation, and meet requirements for operation at ambient temperatures up to 60 °C (140 °F).

HIGHLIGHTS

- Modular and configurable drive
- STO and SIL3 as standard
- Functional safety by fieldbus: PROFIsafe
- Scalable control platform
- Powerful hardware-based security including end-to-end encrypted data transfer
- Connectivity with multiple fieldbuses without changing the hardware
- Industrial IoT-ready with secure OPC UA
- High-torque machine performance
- Superior motor control
- Ultra compact





Configured to your needs

The iC7 drive is configured and delivered to meet your exact requirements, saving expensive installation time. Everything can be integrated: EMC and harmonic filter, brake chopper and DC terminals. Fuse and disconnect are also available built-in, for IP21/UL Type 1 and IP54/ UL Type 12 enclosures.

Control is highly configurable and preconfigured at the factory or can easily be upgraded in the field.

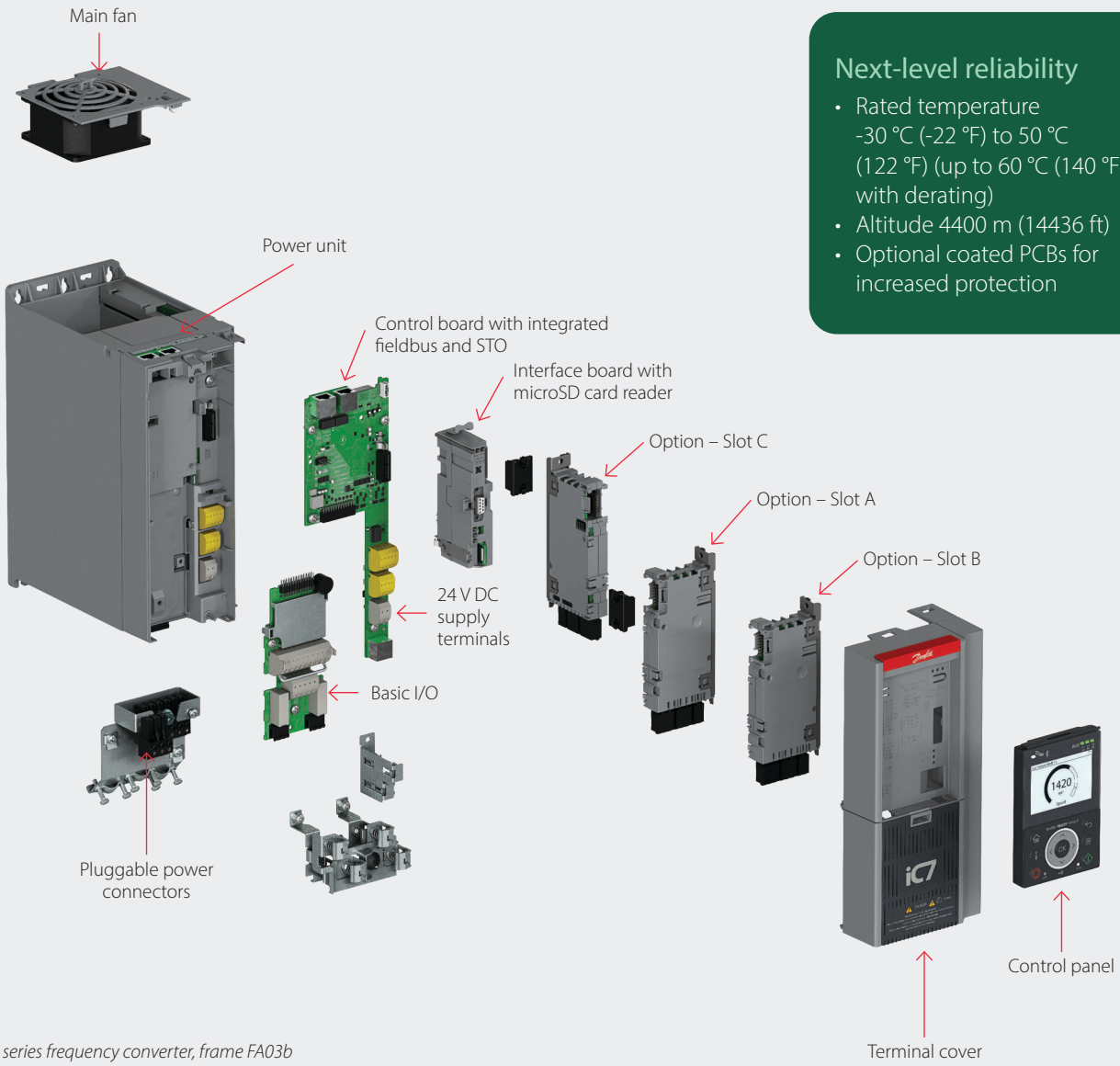
Enclosures fit for installation

Install this space-saving drive easily in cabinets and protected rooms:

- Bookstyle IP20/UL Open Type optimized in width for side-by-side mounting without clearance, to save cabinet space *(Frames FA02-FA12)*
- Designed for flexible installation with minimum use of space
  - IP21/UL Type 1 for frames FK06-FK12
  - IP54/UL Type 12 for frames FB09-FB12

High power density cooling

You get high power density thanks to superior heat management using heat-pipe technology and high-performance heat sinks. Closed air ducts enable flexible mounting, and back-channel cooling supports removal of heat to the surroundings without extra cooling equipment. Remove fans easily for cleaning and service.



iC7 series frequency converter, frame FA03b

Next-level reliability

- Rated temperature -30 °C (-22 °F) to 50 °C (122 °F) (up to 60 °C (140 °F) with derating)
- Altitude 4400 m (14436 ft)
- Optional coated PCBs for increased protection

Fast installation and service

Focus on ease of installation and service has been a key driver during development, with intensive installation testing during the design phase to ensure easy installation and user access.

Control connectors are pluggable. Power connectors are also pluggable for units up to 43 A (22 kW). Connectors are color-coded and clearly marked for easier identification.

Power connectors are rated for use of copper cable at full current plus 25%, matching updated installation standards.

Environmental exposure

The iC7 drive delivers exceptional performance under demanding operating conditions, and its design criteria match the environments described in the IEC60721 standard.

The ability to operate at rated temperatures ranging from -30 °C (-22 °F) to 50 °C (122 °F) (up to 60 °C (140 °F) with derating) ensures the drive meets a broad range of application requirements. With an altitude capability of up to 4400 m (14400 ft) above sea level, you can install this drive in virtually any location. For additional protection, specify the optional coated printed circuit boards increasing corrosion resistance.

This robust drive matches the required vibration resistance for operation in cabinets, in control rooms and on machines.

Future-ready safety compliance

The iC7-Automation frequency converters are engineered to meet some of the most stringent electrical safety requirements in the industry.

By aligning our design with the latest and most demanding criteria, we ensure your drive solution is prepared for future regulations, supporting long-term system reliability, and protecting your investment.

This updated standard sets a new benchmark for electrical safety in variable frequency drives.

By designing iC7-Automation in line with the latest requirements, we ensure your drive solution is future-ready and compliant with upcoming regulations, which supports long-term system reliability and investment protection.

ATEX option for explosive environments

The optional ATEX functionality enables operation of motors in explosive environments in accordance with the ATEX Directive.

The drive protects explosion-protected motors by safely monitoring PTC thermistors, preventing inadmissible overheating due to overload. This ensures compliant and reliable motor protection without the need for external monitoring devices.

This reduces the need for additional external components and simplifies installation. Initial support includes Ex d and Ex de motors.

Cybersecurity SL2 certification

iC7-Automation is designed to meet modern industrial cybersecurity requirements, aligned with IEC 62443-4-2 SL2.

The platform includes hardware-based security features and role-based user management, enabling secure access control and system protection.

In addition, the drive is certified for OPC UA, allowing secure communication and easier asset management across connected systems.

This ensures customers can maintain secure operations today while being prepared to meet future cybersecurity requirements and updates.

PROFINET S2

Support for PROFINET S2 redundancy enables connection to redundant PLC controllers.

If one controller fails, the system automatically switches to the backup controller without interrupting operation. This helps maintain high system availability and uptime, which is essential in industries where continuous operation is critical.

PROFINET S2 functionality is built into the drive, meaning no additional hardware is required.

Supports these communication protocols with no additional hardware

PROFINET EtherNet/IP EtherCAT Modbus OPC UA

Features and benefits







Feature	Benefit
Compact side-by-side mounting	Save space and reduce installation costs
Compact bookshelf design reduces footprint	Reduce space requirement and air-conditioning load
Isolated cooling channel minimizes required installation space	Reduce space requirement and air-conditioning load
Integrated options such as functional extensions, common-mode filters, fuses and disconnects mean no extra external devices are required	Save cost and time in installation
Installer-friendly design includes pluggable control terminals, pluggable power terminals, and replaceable fans	Save cost and time in installation and service
Robust by design, high uptime and quality	Reliable in heavy-duty service
Modular concept	Maximum design flexibility
Synchronization and positioning integrated into the Motion application	Easy to enable using license key Easy to enable in the field
OPC UA	Secure communication and easy integration and asset management across your installed base
Easy to use and powerful logic blocks and states	Unprecedented flexibility beyond parametrization
Compliance with IEC 61800-5-1 Edition 3	Future-ready safety compliance supporting upcoming CE requirements
Integrated ATEX option for Ex d and Ex de motors	The drive provides thermal protection to motors installed in an explosive environment, without external devices
Certified industrial cybersecurity (IEC 62443-4-2 SL2)	Best-in-class security and easier system certification
PROFINET S2 controller redundancy built into the drive	Increased uptime with seamless controller failover and no additional hardware

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Key specifications

Input	
Voltage rating	380-500 V AC, -15%/+10%
Supply frequency	50/60 Hz
Switching on input	1-2 times pr. minute
Grid type	TN, TT, IT, Delta
Output	
Output frequency	0-590 Hz [1]
Overload capacity	110% and 150/160%
Protection ratings	
Frames FAxx	IP20 – UL Open Type
Frames FKxx	IP21 – UL Type 1
Frames FBxx	IP54 – UL Type 12
Environmental conditions	
Rated temperature	-30 to 50 °C (-22 to 122 °F) [2]
Nominal temperature 24 hours	-30 to 45 °C (-22 to 113 °F) [2]
Maximum temperature with derating	60 °C (140 °F)
Rated altitude	1000 m (3300 feet)
Maximum altitude	4400 m (14400 feet) with derating
Relative humidity	3K22, (3K3) 1], maximum 95% non-condensing
Particles (IEC 60721-3-3:2019)	Solid particles (nonconductive particles/dust) 3S6, (3S2) [3]
Chemically active substances (IEC 60721-3-3:2019, ISO 9223:2012)	– C3 (P1) – Medium corrosivity – Non coated (3C2) [3] – C4 (P2) – High corrosivity (3C3) [3] – Coated in IP54/IP55/UL Type 12 enclosure or for IP20/UL Open Type and IP21/UL Type 1 following installation guidance.
Shock & vibration (IEC 60721-3-3:2019)	3M12 (3M4) [3]

Functional Safety I/O	
STO	Dual-channel, with galvanic isolation
STO feedback	Single channel, with galvanic isolation
External supply	
Rating	24 V/2 A
Basic I/O	
Digital inputs	4+2 [4]
– Logic	NPN/PNP selectable – 0/24 V
– Pulse/Encoder input	0-110 kHz
Digital outputs	2 [4]
– Logic	NPN/PNP selectable – 0/24 V
– Pulse output	0-100 kHz
Analog inputs	2
Voltage mode	0-10 or ±10 V, scalable
Current mode	0/4-20 mA
Relay output	2
Function	NO/NC
Rating	250 V AC 2 A, 24 V DC 2 A
Analog output	0/4-20 mA

[1] Higher output frequencies are possible. Contact Danfoss for advice.
[2] Frames Fx09-Fx12: For low overload conditions, the maximum permissible ambient air temperatures without derating are 40° C (104° F) average over 24 hours duration; and 45° C (113° F) for 1 hour duration, respectively.
[3] The environments used as reference for the design criteria are described in standard IEC 60721-3-3:2019, unless otherwise specified. For references based on IEC/EN 61800-2, see the example below.

Example
"C3 (P1) – Medium corrosivity – Non coated" refers to IEC 60721-3-3:2019
"(3C2)" refers to the older IEC 60721-3-3:2019
[4] 2 of the inputs can be reconfigured to outputs

EMC category (model code)	Frame	EN/IEC 61800-3 compliance class					
		Conducted emission			Radiated emission		
		C1	C2	C3	C1	C2	C3
		Cable length [m (ft)]					
F1 – Combined C1 and C2 filter	**Fx02–Fx08**	50 (164)	150 (492)	150 (492)	No	Yes	Yes
F2 – C2 filter	**Fx02–Fx08**	–	150 (492)	150 (492)	No	Yes	Yes
	Fx09-Fx12	–	150 (492)	150 (492)	No	Yes	Yes
F3 – C3 filter	**Fx02–Fx05**	–	–	250 (820)	No	No	Yes
	Fx06–Fx08	–	–	300 (984)	No	No	Yes
	Fx09–Fx12	–	–	150 (492)	No	No	Yes

For information on functional extension option slots, go to page 14

Ratings Fx02-Fx12 – Low overload

Designation	Rated output						Frame
	3 x 380-440 V			3 x 441-500 V			
	I_L	I_{L-OL}	P_{typ}@400 V	I_L	I_{L-OL}	P_{typ}@460 V	
	[A]	[A]	[kW]	[A]	[A]	[HP]	
01A3	1.3	1.4	0.37	1.2	1.3	0.5	**Fx02**
01A8	1.8	2	0.55	1.6	1.8	0.75	
02A4	2.4	2.6	0.75	2.1	2.3	1	
03A0	3	3.3	1.1	2.7	3	1.5	
04A0	4	4.4	1.5	3.4	3.7	2	
05A6	5.6	6.2	2.2	4.8	5.3	3	
07A2	7.2	7.9	3	6.3	6.9	4	
09A2	9.2	10.1	4	8.2	9	5	
12A5	12.5	13.8	5.5	11	12.1	7.5	
16A0	16	17.6	7.5	14.5	16	10	**Fx03**
24A0	24	26	11	21	23	15	**Fx04**
31A0	31	34	15	27	30	20	
38A0	38	42	18.5	34	37	25	**Fx05**
43A0	43	47	22	40	44	30	
61A0	61	67	30	55	61	40	**Fx06**
73A0	73	80	37	66	73	50	
90A0	90	99	45	81	89	60	**Fx07**
106A	106	117	55	96	106	75	
147A	147	162	75	133	146	100	**Fx08**
170A	170	187	90	156	172	125	
206A	206	227	110	196	216	150	**Fx09**
245A	245	270	132	240	264	200	
302A	302	332	160	302	332	250	
385A	385	424	200	364	400	300	
395A	395	435	200	364	400	300	**Fx10**
480A	480	528	250	456	502	350	
588A	588	647	315	520	572	450	
658A	658	724	355	590	649	500	**Fx11**
736A	736	810	400	658	724	550	
799A	799	879	450	730	803	600	
893A	893	982	500	784	862	650	**Fx12**
1000	1000	1100	560	896	986	750	
1120	1120	1232	630	1028	1131	850	
1260	1260	1386	710	1150	1265	950	

I_L: *Rated continuous output*
I_{L-OL}: *Overload rating for 1 min every 10 min*
P_{typ}: *Typical nominal motor power*

Ratings Fx02-Fx12 – High overload

Designation	Rated output						Frame
	3 x 380-440 V			3 x 441-500 V			
	I_{H1}	I_{H1-OL}	P_{typ}@440 V	I_{H1}	I_{H1-OL}	P_{typ}@460 V	
	[A]	[A]	[kW]	[A]	[A]	[HP]	
01A3	1.3	2.1	0.37	1.2	1.9	0.5	**Fx02**
01A8	1.8	2.9	0.55	1.6	2.6	0.75	
02A4	2.4	3.8	0.75	2.1	3.4	1	
03A0	3	4.8	1.1	2.7	4.3	1.5	
04A0	4	6.4	1.5	3.4	5.4	2	
05A6	5.6	9	2.2	4.8	7.7	3	
07A2	7.2	11.5	3	6.3	10.1	4	
09A2	9.2	14.7	4	8.2	13.1	5	
12A5	12.5	20	5.5	11	17.6	7.5	
16A0	16	25.6	7.5	14.5	23.2	10	**Fx03**
24A0	24	38	11	21	34	15	**Fx04**
31A0	31	50	15	27	43	20	
38A0	38	57	18.5	34	51	25	**Fx05**
43A0	43	65	22	40	60	30	
61A0	61	92	30	55	83	40	**Fx06**
73A0	73	110	37	66	99	50	
90A0	90	135	45	81	122	60	**Fx07**
106A	106	159	55	96	144	75	
147A	147	221	75	133	200	100	**Fx08**
170A	170	255	90	156	234	125	
206A	170	255	90	166	249	125	**Fx09**
245A	206	309	110	196	294	150	
302A	245	368	132	240	360	200	
385A	302	453	160	302	453	250	
395A	302	453	160	302	453	250	**Fx10**
480A	385	578	200	364	546	300	
588A	480	720	250	456	684	350	
658A	588	882	315	520	780	450	**Fx11**
736A	658	987	355	590	885	500	
799A	695	1043	400	653	980	550	
893A	799	1199	450	700	1050	550	**Fx12**
1000	880	1320	500	784	1176	650	
1120	1000	1500	560	896	1344	750	
1260	1100	1650	630	1028	1542	850	

I_{H1}: *Rated continuous output*
I_{H1-OL}: *Overload rating for 1 min every 10 min*
P_{typ}: *Typical nominal motor power*

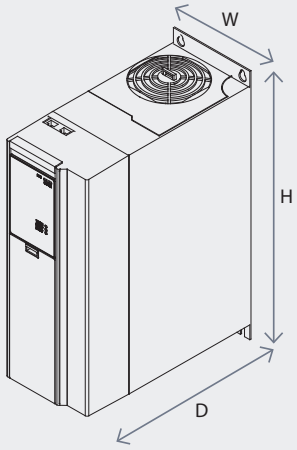
Ratings Fx02-Fx12 – High overload increased duty

Designation	Rated output						Frame
	3 x 380-440 V			3 x 441-500 V			
	I_{H2}	I_{H2-OL}	P_{typ}@440 V	I_{H2}	I_{H2-OL}	P_{typ}@460 V	
	[A]	[A]	[kW]	[A]	[A]	[HP]	
01A3	0.9	1.4	0.25	0.8	1.3	0.33	**Fx02**
01A8	1.3	2.1	0.37	1.1	1.8	0.5	
02A4	1.8	2.9	0.55	1.6	2.6	0.75	
03A0	2.4	3.8	0.75	2.1	3.4	1	
04A0	3.4	5.4	1.1	3	4.8	1.5	
05A6	4.3	6.9	1.5	3.4	5.4	2	
07A2	5.6	9	2.2	4.8	7.7	3	
09A2	8	12.8	3	6.3	10.1	4	
12A5	10	16	4	7.6	12.2	5	
16A0	13	20.8	5.5	11	17.6	7.5	**Fx03**
24A0	17	27	7.5	14.5	23	10	**Fx04**
31A0	25	40	11	21	34	15	
38A0	32	51.2	15	27	41	20	**Fx05**
43A0	38	60.8	18.5	34	51	25	
61A0	46	69	22	40	60	30	**Fx06**
73A0	61	92	30	55	83	40	
90A0	73	110	37	66	99	50	**Fx07**
106A	90	135	45	81	122	60	
147A	106	159	55	96	144	75	**Fx08**
170A	147	221	75	133	200	100	
206A	147	221	75	156	234	125	**Fx09**
245A	170	255	90	166	249	125	
302A	206	309	110	196	294	150	
385A	245	368	132	240	360	200	
395A	245	368	132	240	360	200	**Fx10**
480A	302	453	160	302	453	250	
588A	385	578	200	364	546	300	
658A	480	720	250	456	684	350	**Fx11**
736A	588	882	315	520	780	450	
799A	658	987	355	590	885	500	
893A	736	1104	400	653	980	550	**Fx12**
1000	799	1199	450	700	1050	550	
1120	893	1340	500	784	1176	650	
1260	1000	1500	560	896	1344	750	

I_{H2}: *Rated continuous output*
I_{H2-OL}: *Overload rating for 1 min every 5 min*
P_{typ}: *Typical nominal motor power*

Options

Functional extensions	Description
General Purpose I/O OC7C0	General purpose I/O extension board: 3 digital inputs 2 digital outputs 2 analog inputs 1 analog output
Relay Option OC7R0	Relay I/O extension board, with 3 relays
Encoder/Resolver Option OC7M0	Encoder/Resolver extension board supports 1 or 2 encoders, rotary and linear (TTL, HTL, SinCos, SSI, HIPERFACE®, HIPERFACE DSL®, EnDat, BiSS, resolver)
Temperature Measurement OC7T0	The Temperature Measurement option adds 5 temperature sensor inputs with compensation input. Supported sensors are Pt100, Pt1000, Ni1000, and KTY81
ATEX Temperature Monitor OC7T1	Temperature monitoring extension which provides ATEX-compliant thermal protection to motors installed in an explosive environment, without external devices.
Digital 230 V AC Input OC7D0	The Digital 230 V AC Input OC7D0 option adds 5 digital inputs for 42-240 V AC



Dimensions and weight

Protection rating		IP20					IP21	IP20	IP21	IP20	IP21
Frame		**FA02a**	**FA03a**	**FA04a**	**FA05a**	**FA06**	**FK06**	**FA07**	**FK07**	**FA08**	**FK08**
[mm]	Width	90	114	130	165	200	209	230	239	255	267
	Height	270	270	399	399	555	671	600	770	743	980
	Depth	221	221	262	269	294	303	308	327	368	367
[kg]	Weight	4.7	5.7	11.6	14.1	26	28	35	38	55	62
[in]	Width	3.5	4.5	5.1	6.5	7.9	8.2	9.1	9.4	10.0	267
	Height	10.6	10.6	15.7	15.7	21.9	26.4	23.6	30.3	29.3	980
	Depth	8.7	8.7	10.3	10.6	11.6	11.9	12.1	12.9	14.0	367
[lb]	Weight	10.4	12.6	25.6	31.1	57	61	77	84	121	62

Frames FA02b to FA05b: Add 26 mm (1 in) to depth.
Outer dimensions include mounting flange, without EMC shield plates.
Weight is maximum weight.

Protection rating		IP20	IP21/IP54	IP21/IP54	IP20	IP21/IP54	IP21/IP54	IP20	IP21/IP54	IP20	IP21/IP54
Frame		**FA09**	**FK09a/ FB09a**	**FK09c/ FB09c**	**FA10**	**FK10a/ FB10a**	**FK10c/ FB10c**	**FA11**	**FK11/FB11**	**FA12**	**FK12/FB12**
[mm]	Width	250	327	327	350	422	436	508	602	604	698
	Height	889	999	1423	1096	1230	1779	1578	2043	1578	2043
	Depth	370	378	378	370	378	378	482	510	482	510
[kg]	Weight	81	89	107	127	139	174	225	244	298	327
[in]	Width	9.8	12.9	12.9	13.8	16.6	17.2	20	23.7	23.9	27.5
	Height	35	39.3	56	43.1	48.4	77.8	62.1	80.4	62.1	80.4
	Depth	14.6	14.9	14.9	14.6	14.9	14.9	19	20.1	19	20.1
[lb]	Weight	179	196	236	280	306	384	496	538	654	721

Weight is maximum weight.

Model code overview: iC7-Automation frequency converter

For more detailed information, refer to the Design Guide

[1-6]	[7]	[8]	[9-10]	[11-12]	[14-17]	[18-20]	[21-22]	*]
iC7-60	– F	–	–	–	–	–	–	– .....

[1-6] Product group *(character 1-6)*	
iC7-60	Indication of product group performance
[7] Product category *(character 7)*	
F	Frequency converter
[8] Cooling method *(character 8)*	
A	Air-cooled
[9-10] Product type *(character 9-10)*	
3N	Three-phase 6-pulse
[11-12] Voltage rating *(character 11-12)*	
05	380-500 V AC
[14-17] Nominal Amp rating **] *(character 14-17)*	
01A3	1.3 A
01A8	1.8 A
02A4	2.4 A
03A0	3.0 A
04A0	4.0 A
05A6	5.6 A
07A2	7.2 A
09A2	9.2 A
12A5	12.5 A
16A0	16 A
24A0	24 A
31A0	31 A
38A0	38 A
43A0	43 A
61A0	61 A
73A0	73 A
90A0	90 A
106A	106 A
147A	147 A
170A	170 A
206A	206 A
245A	245 A
302A	302 A
385A	385 A
395A	395 A
480A	480 A
588A	588 A
658A	658A
736A	736 A
799A	799 A
893A	893 A
1000	1000 A
1120	1120 A
1260	1260 A

*] *+codes identifying options*
**] *See rating tables on pages 24-25*

• *available configuration*
A dash (–) indicates that the selection is not available

[18-20] Protection rating *(character 18-20)*		**Fx02-05**	**Fx06-08**	**Fx09-12**
E20	IP20/Open Type	•	•	•
E21	IP21/UL Type 1		•	•
E54	IP54/UL Type 12			•
[21-22] EMC Class *(character 21-22)*				
F1	C1 and C2 category	•	•	
F2	C2 category	•	•	•
F3	C3 category	•	•	•
***] +code group**				
+Axxx	Optional power hardware			
+Bxxx	Control hardware			
+Cxxx	Control options			
+Dxxx	Application software and additional functionality			
+Exxx	Customized settings *(for reference only)*			

+Axxx Optional power hardware IP20

Function	Model code	Selection description	Fx02-05	Fx06-08	Fx09-12
Integrated brake chopper	**+ACXX**	None	–	•	•
	+ACBC	Yes [1]	•	•	• [2]
Extra environmental protection	**+AGXX**	None	•	•	–
	+AGCX	Coated boards	•	•	•
Mains input device	**+AJXX**	None	•	•	•
	+AJFX	AC fuses	–	–	•
DC terminals	**+ALXX**	None	–	•	•
	+ALDC	Yes	•	•	• [2]
Heat sink access panel	**+APXX**	None	•	•	•
	+APHS	Yes	–	–	•

[1] *Not applicable to model 05-385A.*
[2] *DC terminals and brake chopper cannot be combined.*

+Axxx Optional power hardware IP21 (and IP54)

Function	Model code	Selection description	Fx02-05	Fx06-08	Fx09-12
Cable entry and EMC plate	**+AAST**	Standard, no holes	–	•	•
Integrated brake chopper	**+ACXX**	None	–	•	•
	+ACBC	Yes [1]	–	• [2]	• [3]
Extra environmental protection	**+AGXX**	None	–	•	–
	+AGCX	Coated boards	–	•	•
Humidity protection device	**+AHXX**	None	–	•	•
	+AHHX	Space heater	–	–	•
Mains input device	**+AJXX**	None	–	•	–
	+AJFX	AC fuses	–	•	•
	+AJXD	Mains switch	–	• [2]	–
	+AJFD	AC fuses and mains switch	–	• [2]	•
DC terminals	**+ALXX**	None	–	•	•
	+ALDC	Yes	–	• [2]	• [3]
Touch protection	**+AMXX**	None	–	•	•
	+AMMX	Yes	–	–	•
Heat sink access panel	**+APXX**	None	–	•	•
	+APHS	Yes	–	–	•

[1] *Not applicable to model 05-385A.*
[2] *Integrated brake chopper or DC terminals cannot be combined with mains input device options "mains switch" or "AC fuses and mains switch*
[3] *DC terminals and brake chopper cannot be combined.*

+Bxxx Control board features

Function	Model code	Selection description	Fx02-05	Fx06-08	Fx09-12
Communication interface, X1/X2	+BAMT	Modbus TCP OS7MT	•	•	•
	+BAPR	PROFINET RT OS7PR	•	•	•
	+BAIP	EtherNet/IP OS7IP	•	•	•
	+BAEC	EtherCAT OS7EC	•	•	•
	+BAPX	Multi license with PROFINET RT OS7PR active from factory	•	•	•
	+BAIX	Multi license with EtherNet/IP OS7IP active from factory	•	•	•
	+BAEX	Multi license with EtherCAT OS7EC active from factory	•	•	•
Additional communication	**+BBEL**	Ethernet port, no protocol	•	•	•
	+BBUC	OPC UA OS7UC	•	•	•
Functional safety	+BEF1	Safe Torque Off – Not upgradable	•	•	•
	+BEF2	STO, SS1-t, fieldbus	•	•	•
Standard I/O	**+BDXX**	None	•	•	•
	+BDBA	Basic I/O (4 x DI, 2 x combined DI/DO, 2 x AI, 1 x AO, 2 x relay)	•	•	•
Control panel	**+BF00**	Blind Panel OPX00	•	•	
	+BF20	Control Panel 2.8 OPX20	•	•	•

+Cxxx Control options

Functional extension option slots							
Frame	**FA02a**	**FA02b**	**FA03a FA04a**	**FA03b FA04b**	**FA05a**	**FA05b**	**FA06-FA12**
Number of option slots	**1**	**2**	**1**	**3**	**1**	**4**	**4**
Option slot A	•	•	•	•	•	•	•
Option slot B		•		•		•	
Option slot C				•		•	•
Option slot D						•	•
Option slot E							•

Control options (character >21)	
+CBXX	None – Not upgradable [1]
+C_X0	None
+C_C0	General Purpose I/O OC7C0
+C_R0	Relay Option OC7R0
+CAM0	Encoder/Resolver Option OC7M0 [3]
+C_T0	Temperature Measurement OC7T0
+C_D0	Digital 230 VAC Input OC7D0
+C_T1	ATEX Temperature Monitor OC7T1

[1] Only selectable for option slot B
[3] Encoder/Resolver Option must be in option slot A

+Dxxx Application software and additional functionality

Function & code			Fx02-05	Fx06-08	Fx09-12
Additional drive feature	+DD1X	None	•	•	•
	+DD11	Motion	•	•	•
	+DD20	FC 300 series converter	•	•	•
	+DI61	High speed license: extends the drive output frequency to 1000 Hz	•	•	•

Available for iC7-Automation drives

Air-cooled System Modules

Is fast integration your first priority?

Optimize installation footprint, speed and reduce costs more than you dreamed possible, with the revolutionary iC7 series air-cooled system modules.

High power density combined with industry-leading heat-pipe thermal management means you achieve a smaller footprint and reduce space requirements in your electrical room. The slim profile enables you to fit more modules within a fixed-width cabinet. Shrink your system, with smaller enclosures or fewer enclosure sections, and filters which integrate beneath the module.

Integration and scalability are extremely easy, because each unit is designed and tested in thermal independence. This reduces your engineering, assembly, and testing time.

Thermal excellence saves your operating costs with the unique segregated IP54 cooling channel, and reduced heat load in your installation. With the iC7 series air-cooled system modules, you enjoy industry benchmark cooling efficiency, even including the thermal load of optionally integrated filters and chokes. Configure your choice of common-mode and dU/dt filter options in the integration unit located beneath the module.

With the integration unit, access is so easy: simply pull out the power unit, with no need to remove the power cable. Power terminals are located at the front for easy access.

HIGHLIGHTS

> Highly compact power unit design requires less space for installation
> Build high-power drive systems easily, using state-of-the-art paralleling architecture
> Integration unit with built-in filters reduces integration cost
> Fast power unit replacement with no need for motor cable removal
> Front-mounted motor cable terminals
> Lightweight power units facilitate faster and easier servicing
- Modular and scalable control concept
- Efficient heat management with back-channel cooling reduces investment needs in e-room
- STO and SS1-t (SIL3) for full power range

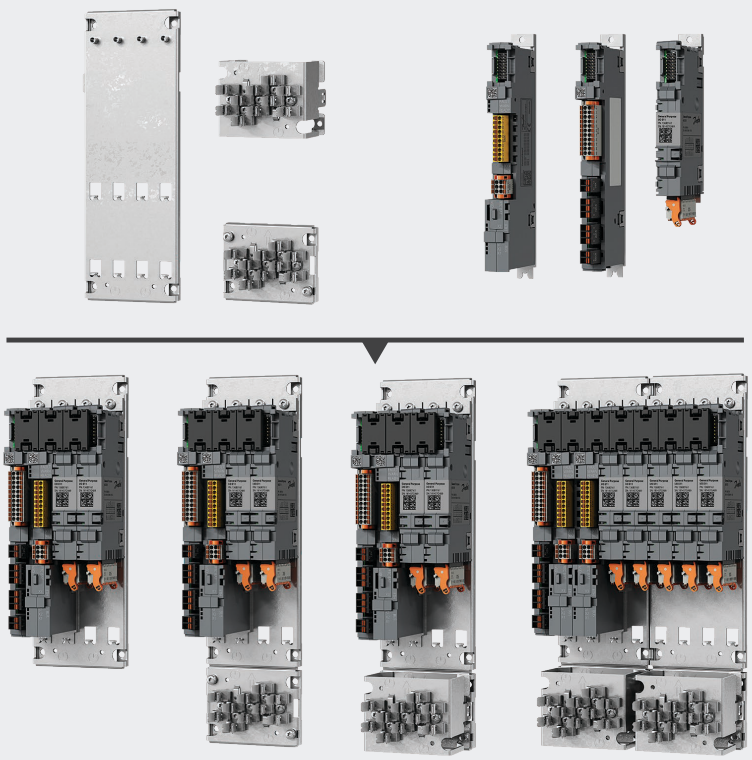


Modular architecture
Setting the standard for modular control

A flexible, modular, control architecture means you can tailor the control functionality exactly to your needs. You can purchase exactly the control options you need, or replace PLC components, I/O and external safety components.

This modularity gives you not only more flexibility, but more secure integration of drives in the control system and IT architecture. You achieve faster set-up, and smarter monitoring, data gathering and analytics thanks to support for multiple communication network types.

The purchase cost is lower since you only buy the necessary control options, saving excess unused functionality. The drive can reduce your costs further by substituting for a low-end PLC controller/system. Program execution close to the process opens new possibilities in fast process control thanks to reduced delays. Built-in security protects your IPR and service business.



Features

- Expandable bus includes I/O, fieldbus, and expanded safety options
- Up to 10 control options
- Slot-independent options
- Integrated microSD card slot
- Integrated STO and SS1-t (SIL3) functional safety, or choose PROFIsafe functional safety by fieldbus
- Use the same options for iC7 series air-cooled system modules, liquid-cooled system modules and enclosed drives

Technical information

- Integrated Ethernet port
- Dual-channel STO SIL3 integrated as standard
- Modbus TCP as standard and other fieldbus protocols optional
- Basic I/O: 6 x DI, 2 x DO, 2 x AI +/-10 V/0-20 mA, 1 x AO (0-10/4-20 mA), 2 x NO/NC RO, 1 x NO RO, 1 x Thermistor
- One optical fiber pair as communication link with power module or star coupler board
- For more options such as voltage measurement, temperature measurement, relay option, and encoder option, refer to the Functional extensions fact sheet.

Functional extensions

Features and benefits

Air-cooled module



Inverter module
IM10



Inverter module
with short integration unit IR10



Inverter module
with standard integration unit IR10



Inverter module
IM11



Inverter module
with short integration unit IR11



Inverter module
with standard integration unit IR11



AFE module
AM10/11



AFE module
with integration unit AR10/AR11





LCL filter
LCL 10/11



NR11
with short integration unit



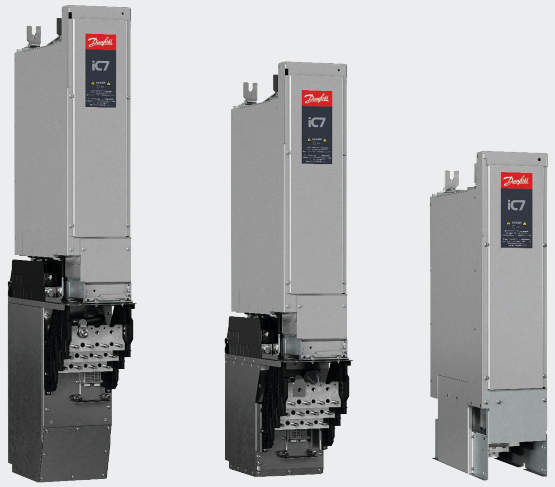
NR11
with standard integration unit

Feature	Benefit
Efficient heat management: heat pipe technology and segregated main cooling channel (back-channel cooling)	– Compact size enables you to pack more power into the space available
Paralleling of 3-phase modules with no output filter required	– Modular and scalable solutions for high powers – Simplified spare unit handling
Lightweight	– Fast integration and serviceability – High vibration robustness
Optional integration unit for output filter integration, enabling back-channel cooling	– Compact size enables you to pack more power into the space available – Fast integration
Pull-out of power unit without removing motor or mains cables, included with integration unit	– Fast integration and serviceability
AuxBus internal network for temperature monitoring of filters	– Exceptional reliability and robustness for increased uptime
Segregated IP54 cooling channel and dedicated PCB area	– Extremely reliable in heavy-duty service, for increased uptime
Fieldbus compatibility includes Modbus TCP, PROFINET RT, EtherNet IP, EtherCAT, Modbus RTU, and OPC UA. Switch easily between protocols using a license key	– Extremely fast and secure communication with no need to exchange hardware
Integrated functional safety: STO and SS1 (SIL3) for full power range	– Low-complexity functional safet
Cybersecurity SL2 certification with hardware-based security	– Secure access, communication, and asset management that is ready for future cybersecurity requirements
Field-programmable spare power, control, and star units	– Reduced spare parts inventory and increased flexibility across drive variants
Easy to use logic blocks	– Unprecedented flexibility beyond parametrization
Programmable spare units with SD memory card configuration	– Fast replacement and minimal downtime with quick and easy setup

Key specifications: Air-cooled system modules

Mains connection, AFE/NFE modules	**AFE**	**NFE**
Nominal AC voltage	– Voltage class 05: 3 x 380-500 V AC (-15% ... +10%) – Voltage class 07: 3 x 525-690 V AC (-15% ... +10%)	
Nominal DC voltage	– Voltage class 05: 465-740 VDC – Voltage class 07: 640-1100 VDC	– 1.35 x AC voltage
Mains frequency	– 45-66 Hz	– 45-66 Hz
Switching frequency	– Voltage class 05: default 4 kHz – Voltage class 07: default 3 kHz	– NA
Mains network	– TN-S, TN-C, IT and TT *(Supply voltage limited to 500 V AC for corner-grounded networks)*	– TN-S, TN-C, IT and TT *(Supply voltage limited to 500 V AC for corner-grounded networks)*
Displacement power factor (DPF)	– 1	– > 0.96
Total harmonic distortion THDi *(nominal situation and undistorted network)*	– < 5%	– < 40%
Short-circuit current rating, with the specified fuses or circuit breakers	– The maximum short-circuit current Icc ≤ 100 kA	The maximum short-circuit current Icc ≤ 100 kA
Overvoltage category according to IEC 61800-5-1	– Category III	– Category III
Voltage imbalance	– AFE: + 3%	– AFE: + 3%
Motor connection (Inverter)		
Output voltage	– Voltage class 05: 400/460/500 V – Voltage class 07: 0-525/575/690 V	
Nominal DC voltage	– Voltage class 05: 465-740 V DC – Voltage class 07: 640–1100 V DC	
Output frequency	– 0-590 Hz	
Switching frequency	– Voltage class 05: Inverter: 1.5–10 kHz DPWM, default 3 kHz DPWM – Voltage class 07: Inverter: 2–6 kHz DPWM, default 2 kHz DPWM	
Field weakening point	– 1-590 Hz	
Motor control principles	– U/f control – VVC+ (Vector Voltage Control) – FVC+ (Flux Vector Control)	
Motor and generator types supported	– Induction/asynchronous motor – Permanent magnet motor – Salient permanent magnet motor – Synchronous reluctance assisted permanent magnet motor	
Cable length	– Up to 150 m (492 ft) symmetrical and shielded motor cable	
EMC (IEC61800-3)		
Immunity	– Fulfils IEC/EN61800-3 (2018), 2nd environment	
Emissions	– IEC/EN61800-3 (2018), category C4, default for the IP00/UL Open Type drive – IEC/EN61800-3 (2018), category C3, if the drive is installed according to the instructions of the manufacturer	
Environmental conditions		
Protection rating drive modules	– IP00/UL Open Type	
Ambient operating temperature	– -15 °C to 0 °C (5 °F to 32 °F) (no frost) The highest current rating of AM11 and IM11 must be derated 20% in freezing conditions. – 0 °C to 40 °C (32 °F to 104 °F) (at IN) with derating up to +55 °C (131 °F)	
Storage/transportation temperature	– -40 °C to +70 °C (32 °F to 158 °F)	
Relative humidity	– 5 to 96% RH, no dripping water or condensation allowed	
Pollution degree	– PD2	
Altitude	Voltage class specific: – Voltage class 05: 0-4000 m (0-13100 ft) above sea level: in case the network is not corner-grounded. – Voltage class 07: 0-2000 m (0-6600 ft) above sea level: in case the network is not corner-grounded – Above 1000 m (3300 ft): derating of the output current by 1% per each 100 m (330 ft) is required.	
Vibration (IEC60068-2-6)	– Displacement amplitude 0.5 mm (peak) at 5–22 Hz) – Maximum acceleration amplitude 1 G at 22–150 Hz	
Shock (IEC60068-2-27)	– Maximum 5 G, 30 ms	
Environmental operating conditions (IEC 60721-3-3	– Climatic conditions: Class 3K5 – Chemically active substances: IEC 60721-3-3 Edition 3.0/ISO 3223 Second Edition, class C4 – Biological conditions: Class 3B1 – Mechanical conditons: Class 3M3 – Mechanically active substances: Class 3S2 – Special climatic conditions (heat radiation): Class 3Z1	
Product safety compliance		
Compliance	– IEC/EN 61800-5-1 + A1; IEC/EN 64477-1 + A1; CSA C22.2 No. 274; UL listed: UL 61800-5-1	

Inverter module



Inverter module

The inverter module is a bidirectional DC-fed power inverter for the supply and control of AC motors and generators.

The inverter module is intended for the regulation of motor speed in response to system feedback or to remote commands from external controllers. A drive system consists of the system modules, the motor, and equipment driven by the motor. The inverter module is also intended for system and motor status surveillance.

Benefits of the Inverter module

- Designed for maximum machine performance and flexibility
- Versatility for drive applications requiring a wide range of drive features for different motor types for either closed loop or open loop control methods
- Inverter module with integration unit offers optional built-in dU/dt filters and/or high-frequency common-mode filters. These ensure space savings and easy cabinet integration.

Ratings

- 690 V variants offer high power capability to support large motors with less current, meaning smaller cables and lower heat losses, therefore higher efficiency. 690 V systems reduce current, allowing for smaller components and better space utilization.
- Scalability means you can use the inverter as part of a common DC bus system with AFE, NFE, or braking units, giving flexibility to tailor the setup.
- 385-4870 A I_L, +10% overload 1 min/5 min at 380-500 V AC motor voltage
- 261-4720A I_L , +10% overload 1 min/5 min at 525-690 V AC motor voltage
- Output frequency: 0-590 Hz

Highlights

- Most compact inverter module on the market thanks to integration of filters
- IP54/Type 12 segregated main cooling channel supporting back-channel cooling solutions
- Designed for enclosure integration and quick serviceability
- Integration of common-mode and dU/dt filters in the integration unit
- Slide-in philosophy for power unit installation means you can remove the power unit without disconnecting the motor cable

Motor control

- Highly dynamic performance: Highest possible machine accuracy due to superior shaft performance, also for sensorless operation
- Superior low-speed performance also in sensorless operation
- The motor always runs at maximum possible torque for the given current – ensuring highest possible motor efficiency: Maximum Torque Per Ampere (MTPA)
- Fast commissioning using Automatic Motor Adaption (AMA) at standstill maximizes energy efficiency with any motor
- More integrated sensors for better performance
- Flexible choice of control features optimized to your application, thanks to integrated application software
- Connect to any motor and the drive will adapt: induction motor (IM), permanent magnet motor (PM), or high-efficiency synchronous reluctance motor (SynRM)

Inverter module

400 V AC, 465-650 V DC

Model code	AC current						Typical motor power 400 V AC		DC currrent	Frame
	I_N	$I_{L\,(1/5)}$	I_L-OL $_{(1/5)}$	$I_{H\,(1/5)}$	I_H-OL $_{(1/5)}$	$I_{max\,(3s)}$	P_L	P_H	I_N-D_C	IP00
	[A]	[A]	[A]	[A]	[A]	[A]	[kW]	[kW]	[A]	
iC7-60SAIN05-385A	394	385	424	320	480	544	200	160	410	**IM/IR10**
iC7-60SAIN05-480A	490	480	528	399	599	679	250	200	510	**IM/IR10**
iC7-60SAIN05-590A	603	590	649	490	735	833	315	250	641	**IM/IR10**
iC7-60SAIN05-658A	672	658	724	547	821	930	355	250	721	**IM/IR11**
iC7-60SAIN05-730A	746	730	803	606	909	1031	400	315	813	**IM/IR11**
iC7-60SAIN05-820A	838	820	902	681	1022	1158	450	355	913	**IM/IR11**
iC7-60SAIN05-880A	899	880	968	731	1097	1243	500	400	1015	**IM/IR11**
iC7-60SAIN05-1000	1021	1000	1100	830	1245	1411	560	450	1138	**2xIM/IR10**
iC7-60SAIN05-1100	1123	1100	1210	913	1370	1553	630	500	1280	**2xIM/IR10**
iC7-60SAIN05-1260	1287	1260	1386	1050	1575	1785	710	560	1441	**2xIM/IR11**
iC7-60SAIN05-1450	1481	1450	1595	1210	1815	2057	800	630	1625	**2xIM/IR11**
iC7-60SAIN05-1710	1746	1710	1881	1420	2130	2414	900	710	1826	**2xIM/IR11**
iC7-60SAIN05-1760	1797	1760	1936	1470	2205	2499	1000	800	2030	**3xIM/IR11**
iC7-60SAIN05-1960	2001	1960	2156	1630	2445	2771	1100	900	2234	**3xIM/IR11**
iC7-60SAIN05-2150	2195	2150	2365	1790	2685	3043	1200	1000	2436	**3xIM/IR11**
iC7-60SAIN05-2510	2563	2510	2761	2090	3135	3553	1400	1100	2841	**3xIM/IR11**
iC7-60SAIN05-2640	2695	2640	2904	2200	3300	3740	1500	1200	3045	**4xIM/IR11**
iC7-60SAIN05-2880	2940	2880	3168	2400	3600	4080	1600	1300	3247	**4xIM/IR11**
iC7-60SAIN05-3280	3349	3280	3608	2730	4095	4641	1800	1500	3652	**4xIM/IR11**
iC7-60SAIN05-3600	3675	3600	3960	2990	4485	5083	2000	1600	4058	**5xIM/IR11**
iC7-60SAIN05-4060	4145	4060	4466	3370	5055	5729	2200	1800	4465	**5xIM/IR11**
iC7-60SAIN05-4320	4410	4320	4752	3590	5385	6103	2400	1900	4871	**6xIM/IR11**
iC7-60SAIN05-4870	4972	4870	5357	4050	6075	6885	2700	2200	5478	**6xIM/IR11**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes
I_H: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes
***OL**: Overload*

Inverter module

460 V AC, 650-740 V DC

Model code	AC current						Typical motor power 460 V AC		DC currrent	Frame
	I_N	$I_{L\ (1/5)}$	I_L-OL $_{(1/5)}$	$I_{H\ (1/5)}$	I_H-OL $_{(1/5)}$	$I_{max\ (3s)}$	P_L	P_H	I_N-D_C	IP00
	[A]	[A]	[A]	[A]	[A]	[A]	[HP]	[HP]	[A]	
iC7-60SAIN05-385A	394	385	424	320	480	544	300	300	380	**IM/IR10**
iC7-60SAIN05-480A	490	480	528	399	599	679	350	350	443	**IM/IR10**
iC7-60SAIN05-590A	543	531	585	441	662	750	450	450	570	**IM/IR10**
iC7-60SAIN05-658A	603	590	649	490	735	833	500	500	632	**IM/IR11**
iC7-60SAIN05-730A	672	658	724	547	821	930	550	550	695	**IM/IR11**
iC7-60SAIN05-820A	746	730	803	606	909	1031	600	600	758	**IM/IR11**
iC7-60SAIN05-880A	838	820	902	681	1022	1158	700	700	883	**IM/IR11**
iC7-60SAIN05-1000	940	920	1012	764	1146	1299	750	750	948	**2xIM/IR10**
iC7-60SAIN05-1100	1052	1030	1133	855	1283	1454	850	850	1073	**2xIM/IR10**
iC7-60SAIN05-1260	1174	1150	1265	960	1440	1632	950	950	1200	**2xIM/IR11**
iC7-60SAIN05-1450	1328	1300	1430	1080	1620	1836	1100	1100	1389	**2xIM/IR11**
iC7-60SAIN05-1710	1603	1570	1727	1310	1965	2227	1300	1300	1641	**2xIM/IR11**
iC7-60SAIN05-1760	1787	1750	1925	1470	2205	2499	1500	1500	1892	**3xIM/IR11**
iC7-60SAIN05-1960	1940	1900	2090	1580	2370	2686	1600	1600	2021	**3xIM/IR11**
iC7-60SAIN05-2150	2083	2040	2244	1700	2550	2890	1700	1700	2146	**3xIM/IR11**
iC7-60SAIN05-2510	2389	2340	2574	1950	2925	3315	1900	1900	2397	**3xIM/IR11**
iC7-60SAIN05-2640	2532	2480	2728	2060	3090	3502	2100	2100	2650	**4xIM/IR11**
iC7-60SAIN05-2880	2685	2630	2893	2190	3285	3723	2200	2200	2775	**4xIM/IR11**
iC7-60SAIN05-3280	3114	3050	3355	2540	3810	4318	2500	2500	3155	**4xIM/IR11**
iC7-60SAIN05-3600	3573	3500	3850	2910	4365	4947	2900	2900	3658	**5xIM/IR11**
iC7-60SAIN05-4060	3859	3780	4158	3140	4710	5338	3200	3200	4036	**5xIM/IR11**
iC7-60SAIN05-4320	4176	4090	4499	3400	5100	5780	3400	3400	4289	**6xIM/IR11**
iC7-60SAIN05-4870	4625	4530	4983	3760	5640	6392	3700	3700	4667	**6xIM/IR11**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes
I_H: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes
***OL**: Overload*

Inverter module

500 V AC, 650-740 V DC

Model code	AC current						Typical motor power 500 V AC		DC currrent	Frame
	I_N	$I_{L\,(1/5)}$	I_L-OL $_{(1/5)}$	$I_{H\,(1/5)}$	I_H-OL $_{(1/5)}$	$I_{max\,(3s)}$	P_L	P_H	I_N-D_C	IP00
	[A]	[A]	[A]	[A]	[A]	[A]	[kW]	[kW]	[A]	
iC7-60SAIN05-385A	394	385	424	320	480	544	250	200	408	**IM/IR10**
iC7-60SAIN05-480A	490	480	528	399	599	679	315	250	513	**IM/IR10**
iC7-60SAIN05-590A	543	531	585	441	662	750	355	250	577	**IM/IR10**
iC7-60SAIN05-658A	603	590	649	490	735	833	400	315	651	**IM/IR11**
iC7-60SAIN05-730A	672	658	724	547	821	930	450	355	731	**IM/IR11**
iC7-60SAIN05-820A	746	730	803	606	909	1031	500	400	812	**IM/IR11**
iC7-60SAIN05-880A	838	820	902	681	1022	1158	560	450	910	**IM/IR11**
iC7-60SAIN05-1000	940	920	1012	764	1146	1299	630	500	1024	**2xIM/IR10**
iC7-60SAIN05-1100	1052	1030	1133	855	1283	1454	710	560	1153	**2xIM/IR10**
iC7-60SAIN05-1260	1174	1150	1265	960	1440	1632	800	630	1300	**2xIM/IR11**
iC7-60SAIN05-1450	1328	1300	1430	1080	1620	1836	900	710	1461	**2xIM/IR11**
iC7-60SAIN05-1710	1603	1570	1727	1310	1965	2227	1100	900	1787	**2xIM/IR11**
iC7-60SAIN05-1760	1787	1750	1925	1470	2205	2499	1200	1000	1949	**3xIM/IR11**
iC7-60SAIN05-1960	1940	1900	2090	1580	2370	2686	1300	1100	2112	**3xIM/IR11**
iC7-60SAIN05-2150	2083	2040	2244	1700	2550	2890	1400	1100	2273	**3xIM/IR11**
iC7-60SAIN05-2510	2389	2340	2574	1950	2925	3315	1600	1300	2598	**3xIM/IR11**
iC7-60SAIN05-2640	2532	2480	2728	2060	3090	3502	1700	1400	2760	**4xIM/IR11**
iC7-60SAIN05-2880	2685	2630	2893	2190	3285	3723	1800	1500	2922	**4xIM/IR11**
iC7-60SAIN05-3280	3114	3050	3355	2540	3810	4318	2000	1700	3246	**4xIM/IR11**
iC7-60SAIN05-3600	3573	3500	3850	2910	4365	4947	2400	1900	3897	**5xIM/IR11**
iC7-60SAIN05-4060	3859	3780	4158	3140	4710	5338	2600	2100	4221	**5xIM/IR11**
iC7-60SAIN05-4320	4176	4090	4499	3400	5100	5780	2800	2300	4546	**6xIM/IR11**
iC7-60SAIN05-4870	4625	4530	4983	3760	5640	6392	3100	2600	5033	**6xIM/IR11**

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
OL: *Overload*

Inverter module

525 V AC, 640-900 V DC

Model code	AC current						Typical motor power 525 V AC		DC currrent	Frame
	I_N	$I_{L\,(1/5)}$	I_L-$OL_{(1/5)}$	$I_{H\,(1/5)}$	I_H-$OL_{(1/5)}$	$I_{max\,(3s)}$	P_L	P_H	I_N-D_C	IP00
	[A]	[A]	[A]	[A]	[A]	[A]	[kW]	[kW]	[A]	
iC7-60SAIN07-261A	267	261	288	217	326	369	160	132	249	**IM/IR10**
iC7-60SAIN07-325A	332	325	358	270	405	459	200	160	311	**IM/IR10**
iC7-60SAIN07-365A	373	365	402	300	450	510	250	200	387	**IM/IR10**
iC7-60SAIN07-416A	425	416	458	345	518	587	315	250	489	**IM/IR10**
iC7-60SAIN07-465A	475	465	512	386	579	657	315	250	489	**IM/IR11**
iC7-60SAIN07-525A	536	525	578	436	654	742	355	315	549	**IM/IR11**
iC7-60SAIN07-590A	603	590	649	490	735	833	400	355	620	**IM/IR11**
iC7-60SAIN07-650A	664	650	715	540	810	918	450	400	696	**2xIM/IR10**
iC7-60SAIN07-730A	746	730	803	605	908	1029	500	450	774	**2xIM/IR10**
iC7-60SAIN07-820A	838	820	902	680	1020	1156	560	500	867	**2xIM/IR10**
iC7-60SAIN07-945A	965	945	1040	785	1178	1335	710	560	1098	**2xIM/IR11**
iC7-60SAIN07-1060	1083	1060	1166	880	1320	1496	800	630	1238	**2xIM/IR11**
iC7-60SAIN07-1180	1205	1180	1298	980	1470	1666	900	710	1392	**2xIM/IR11**
iC7-60SAIN07-1300	1328	1300	1430	1080	1620	1836	1000	800	1547	**3xIM/IR11**
iC7-60SAIN07-1500	1532	1500	1650	1245	1868	2117	1100	900	1702	**3xIM/IR11**
iC7-60SAIN07-1770	1807	1770	1947	1470	2205	2499	1300	1100	2011	**3xIM/IR11**
iC7-60SAIN07-1950	1991	1950	2145	1620	2430	2754	1400	1200	2165	**4xIM/IR11**
iC7-60SAIN07-2360	2410	2360	2596	1960	2940	3332	1700	1400	2629	**4xIM/IR11**
iC7-60SAIN07-2600	2655	2600	2860	2160	3240	3672	1900	1600	2938	**5xIM/IR11**
iC7-60SAIN07-2950	3012	2950	3245	2450	3675	4165	2200	1800	3402	**5xIM/IR11**
iC7-60SAIN07-3250	3318	3250	3575	2700	4050	4590	2400	2000	3711	**6xIM/IR11**
iC7-60SAIN07-3540	3614	3540	3894	2940	4410	4998	2600	2200	4020	**6xIM/IR11**
iC7-60SAIN07-3800	3879	3800	4180	3150	4725	5355	2800	2300	4329	**7xIM/IR11**
iC7-60SAIN07-4130	4216	4130	4543	3430	5145	5831	3100	2500	4793	**7xIM/IR11**
iC7-60SAIN07-4400	4492	4400	4840	3650	5475	6205	3300	2700	5102	**8xIM/IR11**
iC7-60SAIN07-4720	4819	4720	5192	3920	5880	6664	3500	2900	5411	**8xIM/IR11**

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
OL: *Overload*

Inverter module

575 V AC, 640-900 V DC

Model code	AC current						Typical motor power 575 V AC		DC currrent	Frame
	I_N	$I_{L\ (1/5)}$	I_L-$OL_{(1/5)}$	$I_{H\ (1/5)}$	I_H-$OL_{(1/5)}$	$I_{max\ (3s)}$	P_L	P_H	I_N-D_C	IP00
	[A]	[A]	[A]	[A]	[A]	[A]	[HP]	[HP]	[A]	
iC7-60SAIN07-261A	267	261	288	217	326	369	250	200	255	**IM/IR10**
iC7-60SAIN07-325A	332	325	358	270	405	459	300	250	304	**IM/IR10**
iC7-60SAIN07-365A	373	365	402	300	450	510	350	300	354	**IM/IR10**
iC7-60SAIN07-416A	425	416	458	345	518	587	400	350	404	**IM/IR10**
iC7-60SAIN07-465A	475	465	512	386	579	657	450	400	456	**IM/IR11**
iC7-60SAIN07-525A	536	525	578	436	654	742	500	450	505	**IM/IR11**
iC7-60SAIN07-590A	603	590	649	490	735	833	600	500	607	**IM/IR11**
iC7-60SAIN07-650A	664	650	715	540	810	918	650	550	657	**2xIM/IR10**
iC7-60SAIN07-730A	746	730	803	605	908	1029	750	600	759	**2xIM/IR10**
iC7-60SAIN07-820A	838	820	902	680	1020	1156	800	700	809	**2xIM/IR10**
iC7-60SAIN07-945A	965	945	1040	785	1178	1335	950	800	960	**2xIM/IR11**
iC7-60SAIN07-1060	1083	1060	1166	880	1320	1496	1100	900	1112	**2xIM/IR11**
iC7-60SAIN07-1180	1205	1180	1298	980	1470	1666	1200	1000	1212	**2xIM/IR11**
iC7-60SAIN07-1300	1328	1300	1430	1080	1620	1836	1300	1100	1313	**3xIM/IR11**
iC7-60SAIN07-1500	1532	1500	1650	1245	1868	2117	1500	1300	1514	**3xIM/IR11**
iC7-60SAIN07-1770	1807	1770	1947	1470	2205	2499	1800	1500	1818	**3xIM/IR11**
iC7-60SAIN07-1950	1991	1950	2145	1620	2430	2754	2000	1700	2019	**4xIM/IR11**
iC7-60SAIN07-2360	2410	2360	2596	1960	2940	3332	2400	2000	2421	**4xIM/IR11**
iC7-60SAIN07-2600	2655	2600	2860	2160	3240	3672	2700	2200	2725	**5xIM/IR11**
iC7-60SAIN07-2950	3012	2950	3245	2450	3675	4165	3100	2600	3129	**5xIM/IR11**
iC7-60SAIN07-3250	3318	3250	3575	2700	4050	4590	3400	2800	3431	**6xIM/IR11**
iC7-60SAIN07-3540	3614	3540	3894	2940	4410	4998	3700	3100	3734	**6xIM/IR11**
iC7-60SAIN07-3800	3879	3800	4180	3150	4725	5355	4000	3300	4036	**7xIM/IR11**
iC7-60SAIN07-4130	4216	4130	4543	3430	5145	5831	4300	3600	4340	**7xIM/IR11**
iC7-60SAIN07-4400	4492	4400	4840	3650	5475	6205	4600	3800	4642	**8xIM/IR11**
iC7-60SAIN07-4720	4819	4720	5192	3920	5880	6664	5000	4100	5046	**8xIM/IR11**

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
OL: *Overload*

Inverter module

690 V AC, 690-1100 V DC

Model code	AC current						Typical motor power 690 V AC		DC currrent	Frame
	I_N	$I_{L\,(1/5)}$	I_L-$OL_{(1/5)}$	$I_{H\,(1/5)}$	I_H-$OL_{(1/5)}$	$I_{max\,(3s)}$	P_L	P_H	I_N-D_C	IP00
	[A]	[A]	[A]	[A]	[A]	[A]	[kW]	[kW]	[A]	
iC7-60SAIN07-261A	267	261	288	217	326	369	250	200	296	**IM/IR10**
iC7-60SAIN07-325A	332	325	358	270	405	459	315	250	372	**IM/IR10**
iC7-60SAIN07-365A	373	365	402	300	450	510	355	250	418	**IM/IR10**
iC7-60SAIN07-416A	425	416	458	345	518	587	400	315	472	**IM/IR10**
iC7-60SAIN07-465A	475	465	512	386	579	657	450	355	530	**IM/IR11**
iC7-60SAIN07-525A	536	525	578	436	654	742	500	400	589	**IM/IR11**
iC7-60SAIN07-590A	603	590	649	490	735	833	560	450	660	**IM/IR11**
iC7-60SAIN07-650A	664	650	715	540	810	918	630	500	742	**2xIM/IR10**
iC7-60SAIN07-730A	746	730	803	605	908	1029	710	560	836	**2xIM/IR10**
iC7-60SAIN07-820A	838	820	902	680	1020	1156	800	630	942	**2xIM/IR10**
iC7-60SAIN07-945A	965	945	1040	785	1178	1335	900	710	1059	**2xIM/IR11**
iC7-60SAIN07-1060	1083	1060	1166	880	1320	1496	1000	800	1177	**2xIM/IR11**
iC7-60SAIN07-1180	1205	1180	1298	980	1470	1666	1100	900	1295	**2xIM/IR11**
iC7-60SAIN07-1300	1328	1300	1430	1080	1620	1836	1200	1000	1412	**3xIM/IR11**
iC7-60SAIN07-1500	1532	1500	1650	1245	1868	2117	1400	1200	1647	**3xIM/IR11**
iC7-60SAIN07-1770	1807	1770	1947	1470	2205	2499	1600	1400	1882	**3xIM/IR11**
iC7-60SAIN07-1950	1991	1950	2145	1620	2430	2754	1800	1500	2118	**4xIM/IR11**
iC7-60SAIN07-2360	2410	2360	2596	1960	2940	3332	2200	1800	2589	**4xIM/IR11**
iC7-60SAIN07-2600	2655	2600	2860	2160	3240	3672	2400	2000	2824	**5xIM/IR11**
iC7-60SAIN07-2950	3012	2950	3245	2450	3675	4165	2800	2300	3294	**5xIM/IR11**
iC7-60SAIN07-3250	3318	3250	3575	2700	4050	4590	3000	2600	3529	**6xIM/IR11**
iC7-60SAIN07-3540	3614	3540	3894	2940	4410	4998	3300	2800	3882	**6xIM/IR11**
iC7-60SAIN07-3800	3879	3800	4180	3150	4725	5355	3600	3000	4235	**7xIM/IR11**
iC7-60SAIN07-4130	4216	4130	4543	3430	5145	5831	3900	3300	4588	**7xIM/IR11**
iC7-60SAIN07-4400	4492	4400	4840	3650	5475	6205	4200	3500	4941	**8xIM/IR11**
iC7-60SAIN07-4720	4819	4720	5192	3920	5880	6664	4500	3700	5293	**8xIM/IR11**

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
OL: *Overload*



AFE modules



AFE module and LCL filter

The AFE unit is a bi-directional low harmonic supply unit for motor drive applications. Active front end is typically used as a supply to a common DC bus drive line-ups or high power single drives when low harmonics or regeneration of power back to the grid is needed/valued. The main functionality of the AFE is to maintain stable DC-link voltage reference. The AFE transfers power between the grid and the DC bus both ways depending on the load of the DC bus.

To enable low-harmonic and regenerative capabilities, install LCL Filter OF7Z3 on the grid side of each AFE power unit, according to frame.

Benefits of the AFE

- Regenerative energy is fed back to the grid, improving the payback time of the investment. Regeneration at full power is available at any time.
- The AFE can boost the DC-link voltage within the voltage window of the converter hardware. Its advantage is that the DC-voltage available for motor inverters is not limited even under non-ideal grid conditions.
- Power quality is excellent since the grid current is sinusoidal with very low harmonics (<5% THDi) and power factor is unity (cos φ = 1). Avoid oversizing incoming supply transformers, as for traditional diode rectifiers, to reduce investment cost and space.

Ratings

- Voltage class 05:
  3 x 380-500 V AC (-15% ... +10%)
  Voltage class 07:
  3 x 525-690 V AC (-15% ... +10%)
- 317-4900 A_{IL}, +10% overload
  1 min/5 min – 380-500 V AC/
  465-740 V DC
- 236-4240 A_{IL}, +10% overload
  1 min/5 min – 525-690 V AC/
  640-1100 V DC
- 45-66 Hz Grid frequency
- THDi <5%
- Fundamental power factor cos φ = 1, adjustable reactive current set point

Highlights

- Most compact AFE on the market
- Meets the most stringent harmonics requirements thanks to high DC and AC power quality
- Robust and reliable in varying ambient conditions
- IP54/Type 12 segregated main cooling channel supporting back-channel cooling solutions
- Designed for enclosure integration and quick serviceability
- Direct connection between LCL filter and AFE input terminals
- Slide-in philosophy for easy power unit and LCL filter installation and removal

DC-bus and grid control

- Fast primary control ensures stable DC voltage even under non-ideal grid conditions for accurate motor control.
- AFE is able to boost DC voltage to guarantee full motor voltage even when the supply voltage is below nominal.
- Low harmonic operation meets even the stringest power quality requirements for drive systems.
- Reactive reference can be used to compensate other low power factor equipment in the network.
- Build large drive systems with simple system architecture: Connect power units in parallel and control them with a single control unit
- Increase process uptime thanks to built-in redundancy in AFEs consisting of multiple power units

Active front-end modules (AFE)

AFE 400 V AC, 465-650 V DC

Model code	AC ratings				DC ratings			Frame	LCL
	S_N	$I_{N\,(1/5)}$	$I_{L\,(1/5)}$	$I_{H\,(1/5)}$	I_N-D_C	P_L	P_H	IP00	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]		
iC7-60SA3A05-317AE00	220	324	317	263	371	216	179	**AM/AR10**	**LCL10**
iC7-60SA3A05-400AE00	278	409	400	327	469	272	223	**AM/AR10**	**LCL10**
iC7-60SA3A05-514AE00	357	525	514	426	602	349	290	**AM/AR10**	**LCL10**
iC7-60SA3A05-580AE00	402	593	580	464	677	394	316	**AM/AR11**	**LCL11**
iC7-60SA3A05-650AE00	451	664	650	525	760	442	357	**AM/AR11**	**LCL11**
iC7-60SA3A05-730AE00	506	746	730	591	852	496	402	**AM/AR11**	**LCL11**
iC7-60SA3A05-816AE00	566	833	816	678	953	555	461	**AM/AR11**	**LCL11**
iC7-60SA3A05-920AE00	638	940	920	735	1075	625	500	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A05-1030E00	714	1052	1030	850	1203	700	578	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A05-1210E00	839	1236	1210	980	1413	822	666	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A05-1410E00	977	1440	1410	1140	1647	958	775	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A05-1630E00	1130	1664	1630	1360	1903	1107	924	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A05-1860E00	1289	1899	1860	1575	2172	1263	1070	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A05-2120E00	1469	2165	2120	1838	2475	1440	1248	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A05-2450E00	1698	2501	2450	2030	2861	1664	1379	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A05-2800E00	1940	2859	2800	2231	3268	1902	1515	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A05-3270E00	2266	3338	3270	2710	3817	2221	1840	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A05-3650E00	2529	3726	3650	2888	4260	2479	1961	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A05-4080E00	2827	4165	4080	3390	4761	2771	2302	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A05-4500E00	3118	4594	4500	3544	5251	3056	2407	**6xAM/AR11**	**6xLCL11**
iC7-60SA3A05-4900E00	3395	5002	4900	4070	5719	3327	2764	**6xAM/AR11**	**6xLCL11**

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*

Active front-end modules (AFE)

AFE 480 V AC, 650-740 V DC

Model code	AC ratings				DC ratings			Frame	LCL
	S_N	$I_{N\,(1/5)}$	$I_{L\,(1/5)}$	$I_{H\,(1/5)}$	I_N-D_C	P_L	P_H	IP00	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]		
iC7-60SA3A05-317AE00	257	316	309	256	361	252	209	**AM/AR10**	**LCL10**
iC7-60SA3A05-400AE00	316	388	380	298	445	310	243	**AM/AR10**	**LCL10**
iC7-60SA3A05-514AE00	385	473	463	385	542	378	314	**AM/AR10**	**LCL10**
iC7-60SA3A05-580AE00	433	531	520	424	608	424	346	**AM/AR11**	**LCL11**
iC7-60SA3A05-650AE00	487	598	585	470	684	477	383	**AM/AR11**	**LCL11**
iC7-60SA3A05-730AE00	541	664	650	511	759	530	417	**AM/AR11**	**LCL11**
iC7-60SA3A05-816AE00	608	747	731	607	853	596	495	**AM/AR11**	**LCL11**
iC7-60SA3A05-920AE00	686	843	825	639	964	673	521	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A05-1030E00	774	950	930	770	1086	758	628	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A05-1150E00	898	1103	1080	880	1262	880	717	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A05-1280E00	1040	1276	1250	1030	1460	1019	840	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A05-1630E00	1214	1491	1460	1210	1705	1190	986	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A05-1860E00	1389	1705	1670	1363	1949	1361	1111	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A05-2120E00	1588	1950	1910	1533	2230	1557	1250	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A05-2450E00	1821	2236	2190	1820	2557	1785	1483	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A05-2800E00	2087	2563	2510	1874	2930	2046	1527	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A05-3270E00	2428	2981	2920	2430	3408	2380	1980	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A05-3650E00	2736	3359	3290	2726	3840	2681	2222	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A05-4080E00	3035	3726	3650	3030	4260	2974	2469	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A05-4500E00	3334	4094	4010	3152	4681	3268	2569	**6xAM/AR11**	**6xLCL11**
iC7-60SA3A05-4900E00	3650	4482	4390	3640	5124	3577	2966	**6xAM/AR11**	**6xLCL11**

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*

Active front-end modules (AFE)

AFE 525 V AC, 640-900 V DC

Model code	AC ratings				DC ratings			Frame	LCL
	S_L	$I_{N\,(1/5)}$	$I_{L\,(1/5)}$	$I_{H\,(1/5)}$	I_N-D_C	P_L	P_H	IP00	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]		
iC7-60SA3A07-236A	215	241	236	196	276	211	175	**AM/AR10**	**LCL10**
iC7-60SA3A07-300A	273	307	300	249	351	268	222	**AM/AR10**	**LCL10**
iC7-60SA3A07-334A	304	341	334	278	390	298	248	**AM/AR10**	**LCL10**
iC7-60SA3A07-380A	346	388	380	316	444	339	282	**AM/AR10**	**LCL10**
iC7-60SA3A07-425A	387	434	425	353	497	379	315	**AM/AR11**	**LCL11**
iC7-60SA3A07-475A	432	485	475	394	556	424	352	**AM/AR11**	**LCL11**
iC7-60SA3A07-530A	482	542	530	440	620	473	393	**AM/AR11**	**LCL11**
iC7-60SA3A07-595A	542	608	595	494	696	531	441	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A07-670A	610	684	670	556	783	598	496	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A07-760A	692	776	760	631	888	678	563	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A07-850A	773	868	850	706	993	758	630	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A07-945A	860	965	945	784	1104	843	699	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A07-1060A	964	1083	1060	863	1238	945	770	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A07-1190A	1083	1215	1190	988	1390	1061	881	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A07-1325A	1205	1353	1325	1100	1547	1181	981	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A07-1590A	1446	1624	1590	1295	1857	1417	1155	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A07-1780A	1619	1817	1780	1477	2078	1587	1317	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A07-2120A	1928	2165	2120	1725	2475	1890	1538	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A07-2380A	2165	2430	2380	1975	2777	2121	1761	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A07-2650A	2410	2706	2650	2160	3093	2362	1925	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A07-2970A	2701	3032	2970	2465	3466	2647	2197	**6xAM/AR11**	**6xLCL11**
iC7-60SA3A07-3180A	2892	3247	3180	2590	3711	2834	2309	**6xAM/AR11**	**6xLCL11**
iC7-60SA3A07-3350A	3047	3420	3350	2781	3910	2986	2479	**7xAM/AR11**	**7xLCL11**
iC7-60SA3A07-3710A	3374	3788	3710	2988	4330	3307	2663	**7xAM/AR11**	**7xLCL11**
iC7-60SA3A07-4000A	3638	4084	4000	3320	4668	3565	2959	**8xAM/AR11**	**8xLCL11**
iC7-60SA3A07-4240A	3856	4329	4240	3403	4948	3779	3033	**8xAM/AR11**	**8xLCL11**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes
I_H: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes

Active front-end modules (AFE)

AFE 600 V AC, 640-980 V DC

Model code	AC ratings				DC ratings			Frame	LCL
	S_L	$I_{N\,(1/5)}$	$I_{L\,(1/5)}$	$I_{H\,(1/5)}$	I_N-D_C	P_L	P_H	IP00	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]		
iC7-60SA3A07-236A	246	241	236	196	277	241	200	**AM/AR10**	**LCL10**
iC7-60SA3A07-300A	312	307	300	249	351	306	254	**AM/AR10**	**LCL10**
iC7-60SA3A07-334A	348	341	334	278	391	341	284	**AM/AR10**	**LCL10**
iC7-60SA3A07-380A	395	388	380	316	445	388	322	**AM/AR10**	**LCL10**
iC7-60SA3A07-425A	442	434	425	353	497	433	360	**AM/AR11**	**LCL11**
iC7-60SA3A07-475A	494	485	475	394	555	484	402	**AM/AR11**	**LCL11**
iC7-60SA3A07-530A	551	542	530	440	619	540	449	**AM/AR11**	**LCL11**
iC7-60SA3A07-595A	619	608	595	494	695	606	504	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A07-670A	697	684	670	556	783	683	567	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A07-760A	790	776	760	631	888	775	643	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A07-850A	884	868	850	706	993	866	720	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A07-945A	983	965	945	784	1104	963	799	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A07-1060A	1102	1083	1060	863	1237	1080	879	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A07-1190A	1237	1215	1190	988	1390	1212	1007	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A07-1325A	1377	1353	1325	1100	1547	1350	1121	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A07-1590A	1653	1624	1590	1295	1856	1620	1319	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A07-1780A	1850	1817	1780	1477	2078	1813	1505	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A07-2120A	2204	2165	2120	1725	2474	2160	1757	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A07-2380A	2474	2430	2380	1975	2778	2424	2012	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A07-2650A	2754	2706	2650	2160	3093	2699	2200	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A07-2970A	3087	3032	2970	2465	3466	3025	2511	**6xAM/AR11**	**6xLCL11**
iC7-60SA3A07-3180A	3305	3247	3180	2590	3711	3239	2638	**6xAM/AR11**	**6xLCL11**
iC7-60SA3A07-3350A	3482	3420	3350	2781	3910	3412	2833	**7xAM/AR11**	**7xLCL11**
iC7-60SA3A07-3710A	3856	3788	3710	2988	4329	3779	3044	**7xAM/AR11**	**7xLCL11**
iC7-60SA3A07-4000A	4157	4084	4000	3320	4668	4074	3382	**8xAM/AR11**	**8xLCL11**
iC7-60SA3A07-4240A	4407	4329	4240	3403	4948	4319	3466	**8xAM/AR11**	**8xLCL11**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes
I_H: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes

Active front-end modules (AFE)

AFE 690 V AC, 690-1100 V DC

Model code	AC ratings				DC ratings			Frame	LCL
	S_L	$I_{N\,(1/5)}$	$I_{L\,(1/5)}$	$I_{H\,(1/5)}$	I_N-D_C	P_L	P_H	IP00	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]		
iC7-60SA3A07-236A	283	241	236	196	277	277	230	**AM/AR10**	**LCL10**
iC7-60SA3A07-300A	359	307	300	249	351	352	292	**AM/AR10**	**LCL10**
iC7-60SA3A07-334A	400	341	334	278	391	392	326	**AM/AR10**	**LCL10**
iC7-60SA3A07-380A	455	388	380	316	445	446	371	**AM/AR10**	**LCL10**
iC7-60SA3A07-425A	508	434	425	353	497	498	414	**AM/AR11**	**LCL11**
iC7-60SA3A07-475A	568	485	475	394	555	557	462	**AM/AR11**	**LCL11**
iC7-60SA3A07-530A	634	542	530	440	619	621	516	**AM/AR11**	**LCL11**
iC7-60SA3A07-595A	712	608	595	494	695	697	579	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A07-670A	801	684	670	556	783	785	652	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A07-760A	909	776	760	631	888	891	740	**2xAM/AR10**	**2xLCL10**
iC7-60SA3A07-850A	1016	868	850	706	993	996	827	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A07-945A	1130	965	945	784	1103	1107	919	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A07-1060	1267	1083	1060	863	1238	1242	1011	**2xAM/AR11**	**2xLCL11**
iC7-60SA3A07-1190A	1423	1215	1190	988	1389	1394	1158	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A07-1325A	1584	1353	1325	1100	1547	1552	1289	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A07-1590A	1901	1624	1590	1295	1856	1863	1517	**3xAM/AR11**	**3xLCL11**
iC7-60SA3A07-1780A	2128	1817	1780	1477	2078	2085	1730	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A07-2120A	2534	2165	2120	1725	2475	2483	2021	**4xAM/AR11**	**4xLCL11**
iC7-60SA3A07-2380A	2845	2430	2380	1975	2778	2788	2314	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A07-2650A	3168	2706	2650	2160	3093	3104	2530	**5xAM/AR11**	**5xLCL11**
iC7-60SA3A07-2970A	3550	3032	2970	2465	3466	3479	2888	**6xAM/AR11**	**6xLCL11**
iC7-60SA3A07-3180A	3801	3247	3180	2590	3711	3725	3034	**6xAM/AR11**	**6xLCL11**
iC7-60SA3A07-3350A	4004	3420	3350	2781	3910	3924	3258	**7xAM/AR11**	**7xLCL11**
iC7-60SA3A07-3710A	4434	3788	3710	2988	4330	4346	3500	**7xAM/AR11**	**7xLCL11**
iC7-60SA3A07-4000A	4781	4084	4000	3320	4668	4685	3889	**8xAM/AR11**	**8xLCL11**
iC7-60SA3A07-4240A	5068	4329	4240	3403	4949	4966	3986	**8xAM/AR11**	**8xLCL11**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes
I_H: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes

Non-regenerative front-end (NFE) modules



The non-regenerative front-end (NFE) unit is a unidirectional supply unit for motor drive applications. It is typically used as a supply to a common DC bus line-up or individual high-power drives where regeneration of power back to the grid is not required. The main functionality of the NFE is to maintain a stable DC-link voltage while ensuring efficient and robust operation of the connected drives. Power flows one way only – from the grid to the DC bus. The iC7-Automation NFE unit comes with an inbuilt AC choke for reduced harmonics and improved power quality, and an integrated pre-charging function for safe and controlled charging of the DC link.

Benefits of the NFE

- Simple and cost-effective solution for applications with no regenerative braking requirement
- Reliable DC supply ensures stable operation of all connected inverters
- Integrated AC choke reduces current harmonics and increases system robustness
- Integrated pre-charging functionality ensures safe DC-link pre-charging without external components
- Compact design saves space and simplifies system integration
- Easy engineering and installation with fewer components than regenerative solutions
- Lower investment and maintenance costs, thanks to proven rectifier technology

Ratings

- The 690 V voltage class supports large systems and is ideal for high-power industrial applications like marine, mining, or heavy manufacturing
- 694-6260 A_{IL}, +10% overload 1 min/5 min – 380-500 V AC/ 465-740 V DC
- 504-5750 A_IL, +10% overload 1 min/5 min – 525-690 V AC/ 640-1100 V DC
- 45-66 Hz Grid frequency

Highlights

- Compact non-regenerative front end for easy system integration
- Built-in AC choke and pre-charging functionality as standard
- Proven, robust rectifier technology ensuring reliable performance
- Meets typical grid requirements for non-regenerative installations
- Designed for straightforward service with slide-in unit handling
- Optimized cooling concept for long lifetime and dependable operation
- Scalable with multiple NFE power units connected in parallel to supply one DC bus

Non-regenerative front-end (NFE) modules

NFE modules 380-440 V AC, 400 V AC

Model code	AC ratings				DC ratings			Frame
	S_L	$I_{N\ (1/5)}$	$I_{L\ (1/5)}$	$I_{H\ (1/5)}$	I_N-D_C	P_L	P_H	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]	
iC7-60SA3N05-730A	506	746	730	605	854	451	374	**NR11**
iC7-60SA3N05-869A	603	886	869	720	1013	537	445	**NR11**
iC7-60SA3N05-1094	758	1117	1094	908	1280	676	562	**NR11**
iC7-60SA3N05-1420	984	1450	1420	1180	1660	877	730	**2xNR11**
iC7-60SA3N05-1600	1109	1634	1600	1330	1871	989	822	**2xNR11**
iC7-60SA3N05-2090	1448	2134	2090	1730	2443	1291	1070	**2xNR11**
iC7-60SA3N05-2450	1920	2501	2450	2030	2863	1514	1255	**3xNR11**
iC7-60SA3N05-3130	2169	3196	3130	2600	3658	1934	1607	**3xNR11**
iC7-60SA3N05-4170	2890	4257	4170	3460	4873	2577	2139	**4xNR11**
iC7-60SA3N05-5210	3610	5319	5210	4330	6088	3219	2676	**5xNR11**
iC7-60SA3N05-6260	4338	6391	6260	5200	7313	3868	3214	**6xNR11**

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*

NFE modules 440-480 V AC, 480 V AC

Model code	AC ratings				DC ratings			Frame
	S_L	$I_{N\ (1/5)}$	$I_{L\ (1/5)}$	$I_{H\ (1/5)}$	I_N-D_C	P_L	P_H	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]	
iC7-60SA3N05-730A	607	746	730	605	854	541	449	**NR11**
iC7-60SA3N05-869A	723	886	869	720	1014	644	534	**NR11**
iC7-60SA3N05-1094	910	1117	1094	908	1280	811	674	**NR11**
iC7-60SA3N05-1420	1181	1450	1420	1180	1659	1053	875	**2xNR11**
iC7-60SA3N05-1600	1331	1637	1600	1330	1874	1186	987	**2xNR11**
iC7-60SA3N05-2090	1738	2134	2090	1730	2442	1550	1283	**2xNR11**
iC7-60SA3N05-2450	1920	2501	2450	2030	2863	1817	1506	**3xNR11**
iC7-60SA3N05-3130	2603	3196	3130	2600	3658	2321	1928	**3xNR11**
iC7-60SA3N05-4170	3467	4257	4170	3460	4872	3092	2566	**4xNR11**
iC7-60SA3N05-5210	4332	5319	5210	4330	6087	3863	3211	**5xNR11**
iC7-60SA3N05-6260	5205	6391	6260	5200	7314	4642	3856	**6xNR11**

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*

Non-regenerative front-end (NFE) modules

NFE modules 480-500 V AC, 500 V AC

Model code	AC ratings				DC ratings			Frame
	S_L	$I_{N\,(1/5)}$	$I_{L\,(1/5)}$	$I_{H\,(1/5)}$	I_N-D_C	P_L	P_H	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]	
iC7-60SA3N05-730A	633	746	730	605	854	564	468	**NR11**
iC7-60SA3N05-869A	753	886	869	720	1014	671	557	**NR11**
iC7-60SA3N05-1094	948	1117	1094	908	1279	845	702	**NR11**
iC7-60SA3N05-1420	1230	1447	1420	1180	1657	1097	912	**2xNR11**
iC7-60SA3N05-1600	1386	1634	1600	1330	1870	1236	1028	**2xNR11**
iC7-60SA3N05-2090	1810	2134	2090	1730	2442	1614	1337	**2xNR11**
iC7-60SA3N05-2450	1920	2501	2450	2030	2863	1892	1568	**3xNR11**
iC7-60SA3N05-3130	2711	3196	3130	2600	3657	2418	2009	**3xNR11**
iC7-60SA3N05-4170	3612	4257	4170	3460	4872	3221	2673	**4xNR11**
iC7-60SA3N05-5210	4512	5319	5210	4330	6086	4024	3345	**5xNR11**
iC7-60SA3N05-6260	5422	6391	6260	5200	7313	4835	4017	**6xNR11**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes
I_H: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes

NFE modules 525-550 V AC, 525 V AC

Model code	AC ratings				DC ratings			Frame
	S_L	$I_{N\,(1/5)}$	$I_{L\,(1/5)}$	$I_{H\,(1/5)}$	I_N-D_C	P_L	P_H	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]	
iC7-60SA3N07-504A	459	515	504	420	590	409	341	**NR11**
iC7-60SA3N07-605A	551	618	605	500	707	491	406	**NR11**
iC7-60SA3N07-806A	733	823	806	670	943	654	544	**NR11**
iC7-60SA3N07-1007	916	1028	1007	840	1177	817	682	**NR11**
iC7-60SA3N07-1150	1046	1174	1150	950	1345	933	771	**2xNR11**
iC7-60SA3N07-1500	1364	1532	1500	1250	1753	1217	1014	**2xNR11**
iC7-60SA3N07-1960	1783	2001	1960	1630	2290	1590	1322	**2xNR11**
iC7-60SA3N07-2300	2092	2348	2300	1900	2688	1866	1541	**3xNR11**
iC7-60SA3N07-2900	2638	2961	2900	2400	3388	2352	1947	**3xNR11**
iC7-60SA3N07-3850	3501	3931	3850	3200	4499	3123	2596	**4xNR11**
iC7-60SA3N07-4800	4365	4900	4800	4000	5608	3893	3245	**5xNR11**
iC7-60SA3N07-5750	5229	5870	5750	4750	6718	4664	3853	**6xNR11**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes
I_H: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes

Non-regenerative front-end (NFE) modules

NFE modules 550-600 V AC, 600 V AC

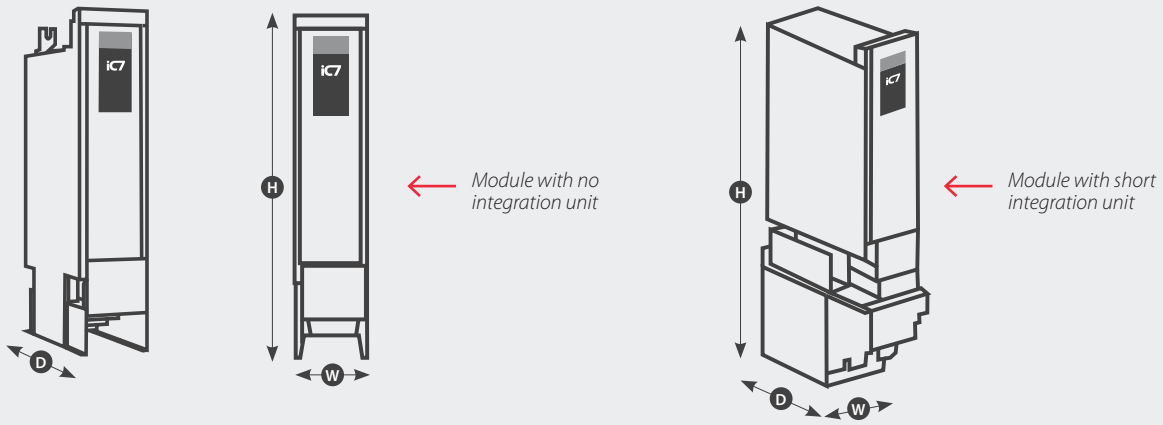
Model code	AC ratings				DC ratings			Frame
	S_L	$I_{N\,(1/5)}$	$I_{L\,(1/5)}$	$I_{H\,(1/5)}$	I_N-D_C	P_L	P_H	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]	
iC7-60SA3N07-504A	524	515	504	420	589	468	390	**NR11**
iC7-60SA3N07-605A	629	618	605	500	708	561	464	**NR11**
iC7-60SA3N07-806A	838	823	806	670	942	748	622	**NR11**
iC7-60SA3N07-1007	1047	1028	1007	840	1177	934	779	**NR11**
iC7-60SA3N07-1150	1196	1174	1150	950	1345	1066	881	**2xNR11**
iC7-60SA3N07-1500	1559	1532	1500	1250	1754	1391	1159	**2xNR11**
iC7-60SA3N07-1960	2037	2001	1960	1630	2291	1817	1511	**2xNR11**
iC7-60SA3N07-2300	2391	2348	2300	1900	2688	2132	1762	**3xNR11**
iC7-60SA3N07-2900	3014	2961	2900	2400	3388	2688	2225	**3xNR11**
iC7-60SA3N07-3850	4002	3931	3850	3200	4498	3569	2967	**4xNR11**
iC7-60SA3N07-4800	4989	4900	4800	4000	5608	4450	3708	**5xNR11**
iC7-60SA3N07-5750	5976	5870	5750	4750	6718	5330	4403	**6xNR11**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes
I_H: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes

NFE modules 600-690 V AC, 690 V AC

Model code	AC ratings				DC ratings			Frame
	S_L	$I_{N\,(1/5)}$	$I_{L\,(1/5)}$	$I_{H\,(1/5)}$	I_N-D_C	P_L	P_H	IP00
	[KVA]	[A]	[A]	[A]	[A]	[kW]	[kW]	
iC7-60SA3N07-504A	603	515	504	420	590	538	448	**NR11**
iC7-60SA3N07-605A	724	618	605	500	708	645	533	**NR11**
iC7-60SA3N07-806A	964	823	806	670	942	860	715	**NR11**
iC7-60SA3N07-1007	1204	1028	1007	840	1177	1074	896	**NR11**
iC7-60SA3N07-1150	1375	1174	1150	950	1345	1226	1013	**2xNR11**
iC7-60SA3N07-1500	1793	1532	1500	1250	1754	1599	1333	**2xNR11**
iC7-60SA3N07-1960	2343	2001	1960	1630	2290	2090	1738	**2xNR11**
iC7-60SA3N07-2300	2749	2348	2300	1900	2688	2452	2026	**3xNR11**
iC7-60SA3N07-2900	3466	2961	2900	2400	3389	3092	2559	**3xNR11**
iC7-60SA3N07-3850	4602	3931	3850	3200	4499	4104	3411	**4xNR11**
iC7-60SA3N07-4800	5737	4900	4800	4000	5608	5117	4264	**5xNR11**
iC7-60SA3N07-5750	6872	5870	5750	4750	6718	6130	5064	**6xNR11**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes
I_H: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes



Dimensions and weight: Inverter and AFE modules, LCL filters

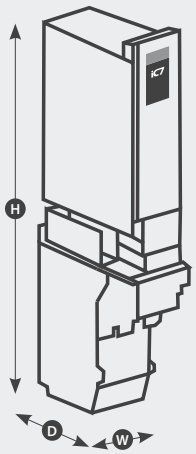
Module type		Inverter		AFE		LCL filters
Frame		**IM10**	**IM11**	**AM10**	**AM11**	**LCL10/LCL11**
[mm]	Width	170	210	170	210	260
	Height	990	990	990	990	1530
	Depth	502	502	502	502	553
[kg]	Weight	65	75	65	75	–
[in]	Width	6.7	8.3	6,7	8.3	10.2
	Height	39	39	39	39	60.2
	Depth	19.8	19.8	19.8	19.8	21.8
[lb]	Weight	143	165	143	165	–

For more information refer to the iC7-60 Air-cooled System Modules Design Guide

Dimensions and weight: Inverter, AFE and NFE modules with short integration unit

Module type		Inverter with integration unit		AFE with integration unit		NFE with integration unit
Frame		**IR10**	**IR11**	**AR10**	**AR11**	**NR11**
[mm]	Width	235	235	235	235	235
	Height	1302	1302	921	921	921
	Depth	553	553	553	553	553
[kg]	Weight	90	100	72	82	125-145
[in]	Width	9.3	9.3	9.3	9.3	9.3
	Height	51.3	51.3	36.3	36.3	36.3
	Depth	21.8	21.8	21.8	21.8	21.8
[lb]	Weight	198	221	159	181	276-320

Weight values are for module with empty integration unit, excluding filter weight .
For more information refer to the iC7-60 Air-cooled System Modules Design Guide



Module with standard integration unit

Dimensions and weight: Inverter, AFE, and NFE modules with standard integration unit

Module type		**Inverter with integration unit**		**AFE with integration unit**		**NFE with integration unit**
Frame		**IR10**	**IR11**	**AR10**	**AR11**	**NR11**
[mm]	Width	235	235	235	235	235
	Height	1530	1530	1530	1530	1530
	Depth	553	553	553	553	553
[kg]	Weight	92	102	78	88	125-145
[in]	Width	9.3	9.3	9.3	235	235
	Height	60.2	60.2	60.2	1530	1530
	Depth	21.8	21.8	21.8	553	553
[lb]	Weight	202.8	224.9	172	194	276-320

Weight values are for module with empty integration unit, excluding filter weight .
For more information refer to the iC7-60 Air-cooled System Modules Design Guide

Model code overview: iC7-Automation system modules

For more detailed information, refer to the Design Guide

[1-6]		[7]	[8]	[9-10]		[11-12]		[14-17]		[18-20]		[21-22]		1]
iC7-60	–	**S**	**A**		–		–		–		–		–	**.....**

[1-6] Product group *(character 1-6)*	
iC7-60	Indication of product group performance
[7] Product category *(character 7)*	
S	System Module
[8] Cooling method *(character 8)*	
A	Air-cooled
[9-10] Product type *(character 9-10)*	
3A	3~ regenerative, AFE
3H	3~ low harmonic AFE
IN	Inverter module
3N	Non-regenerative front-end, NFE
[11-12] Voltage rating *(character 11-12)*	
05	380-500 V AC
07	525-690 V AC
[14-17] Nominal Amp rating [2] *(character 14-17)*	
-317A	317 A
-400A	400 A
-514A	514 A
...	...
-4900	4900 A

[1] *+codes identifying options*
[2] *See rating tables on pages 31-47*

[18-20] Protection rating *(character 18-20)*		**Inverters**	**AFE and NFE**
E00	IP00	•	•
[21-22] EMC Class *(character 21-22)*			
F3	C3 category: industrial environment	•	•
F4	C4 category: System Component (IT Network)		•
[1]] +code group			
+Axxx	Optional power hardware		
+Bxxx	Control hardware		
+Cxxx	Control options		
+Dxxx	Application software and additional functionality		
+Exxx	Customized settings *(for reference only)*		

+AExx Optional power hardware: Integration unit options

Model code	Selection description	Inverters	AFE and NFE
+AEXX	None	•	• [3]
+AE01	Short, no filter	•	•
+AEC1	Short, with CM filter	•	–
+AE10	Standard, no filter	•	•
+AEU1	Standard, with dU/dt filter	•	–
+AEU2	Standard, with dU/dt and CM filter	•	–
+AEC2	Standard, with CM filter	•	–

[3] *+AEXX not available for NFE*

+BAxx Control hardware: Communication interface, X1/X2

Model code	Selection description	Inverters	AFE and NFE
+BAEL	Ethernet port, no protocol	•	•
+BAPR	PROFINET RT OS7PR	•	•
+BAMT	Modbus TCP OS7MT	•	•
+BAIP	Ethernet/IP OS7IP	•	•
+BAEC	EtherCAT OS7EC	•	•
Additional communication			
+BBUC	OPC UA OS7UC	•	•

+BExx Control hardware: Functional safety

Model code	Selection description	Inverters	AFE and NFE
+BEXX	None, not upgradable	•	•
+BEF2	STO, SS1-t	•	–

+Cxxx Control options (Option slots Ato J)

Model code	Selection description	Inverters	Active Front Ends
+CXXX	None, without mounting plate	•	•
+CXX0	None	•	•
+CXC0	General Purpose I/O OC7C0	•	–
+CXC1	I/O and Relay Option OC7C1	•	•
+CXR0	Relay Option OC7R0	•	–
+CXM0	Encoder/Resolver Option OC7M0	•	–
+CXT0	Temperature Measurement OC7T0	•	•

See full list of options for each +code group in Design Guide

• indicates a standard selection
A dash (–) indicates that the selection is not available

Model code overview: LCL filters for AFE System modules

For more detailed information, refer to the Design Guide

[1-5]		[6]		[7-9]		[10-12]		[13-17]		[18-20]		[21-22]		[23-25]
OF7Z3	–	**M**	–		–		–		–		–		–	.....

[1-5] Product series *(character 1-5)*	
OF7Z3	LCL-Filter
[6] Product category *(character 6)*	
S	System Module
[7-9] Cooling method *(character 7-9)*	
-AF	Forced air
[10-12] Voltage class *(character 10-12)*	
-05	380-500 V AC
-07	525-690 V AC
[13-17] Current rating ($I_{L(1/5)}$) *(character 13-17)*	
-380A	380 A
-514A	514 A
-530A	530 A
-816A	816 A
-820A	820 A
[18-20] Thermail protection *(character 18-20)*	
-A1	AusBus thermail protection
[21-22] Enclosure class *(character 21-24)*	
-E00	IP00/Open Type
-C54	IP54/UL Type 12 cooling channel
[23-25] EMC class *(character 25-27)*	
-F3	C3 compliance
-F4	C4 compliance

Available for iC7-Automation drives

Enclosed Drives

Need more freedom for streamlined integration?

iC7 series Enclosed Drives open up new application opportunities with flexible system integration in a wide range of industries.

Optimized for compact footprint, ease of use and fast serviceability, you can apply these drives to enhance motor control. A range of variants and options equip you to make precisely the right choices ensuring high performance and local compliance, including harmonic compliance.

Most importantly, you can count on the Enclosed Drives for exceptional reliability, being founded in fully traceable end-to-end quality processes.

Compact

Sophisticated heat management is a key factor endowing the Enclosed Drives with a compact footprint. These drives are equipped with heatpipe-based thermal management, optional back-channel cooling, and segregated main and auxiliary cooling channels. All of these technologies reduce the drive dimensions, enable reduction of air-conditioning load, and even enable you to cut down on space in the electrical room.

Versatile

iC7 Enclosed Drives are available in standard cabinet sizes, configured in the right variant to suit your application:

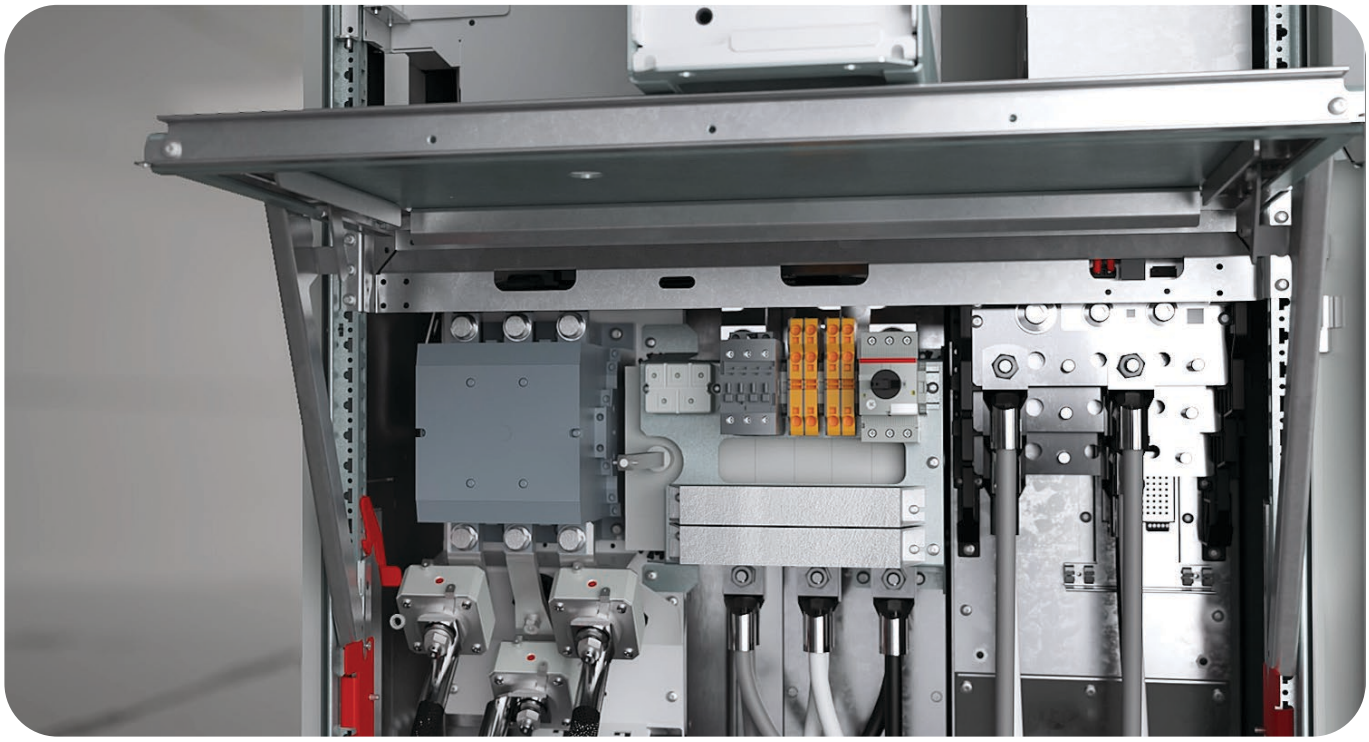
- 6-pulse, low-harmonic, and regenerative variants
- 6-pulse variant where low-harmonic and regenerative is not needed
- Wide range of options

HIGHLIGHTS

> Streamlined system integration
> Fast and safe service access
> 6-pulse, low-harmonic, and regenerative variants
> Intelligent heat management
> Modular control
> Small footprint thanks to cutting-edge heat management
> Wide range of cabinet options
> STO and SS1-t (SIL3) for full power range plus optional STO button on door




DANGER
HIGH VOLTAGE
MAIN SWITCH



Scalability and speedy service

High power density cooling

You get high power density thanks to superior heat management using heatpipe technology and high-performance heat sinks. Closed air ducts enable flexible mounting, and back-channel cooling supports removal of heat to the surroundings without extra cooling equipment. Remove fans easily for cleaning and service.

Environmental exposure

The iC7 drive delivers exceptional performance under demanding operating conditions, according to the environmental standard IEC60721.

The ability to operate at ambient temperatures ranging from -15 °C (5 °F) to 40 °C (104 °F) (50 °C (122 °F) with derating) ensures the drive meets a broad range of application requirements. With an altitude capability of up to 3000 m (9800 ft) above sea level, you can install this drive in virtually any location.

This robust drive matches the required vibration resistance for operation in cabinets, in control rooms and on machines.

Fast and safe serviceability

Access cables easily with no need to remove the power module.

Service access is extremely convenient and fast with integrated service table, and optional hoist bracket on top of the cabinet. Remove the power module easily, with no need to remove motor cabling. The control compartment door-in-door concept aids safe and fast work and you can swing out the control compartment frame easily to access the power modules.

Modular architecture: Setting the standard for modular control

Flexible modular control architecture means you can tailor the control functionality exactly to your needs. You can purchase exactly the control options you need. You can also use drive options as an alternative to external components such as PLC components, I/O and external safety components.

This modularity gives you not only more flexibility, but more secure integration of drives in the control system and IT architecture. You achieve faster set-up, and smarter monitoring, data gathering and analytics thanks to support for multiple communication network types.

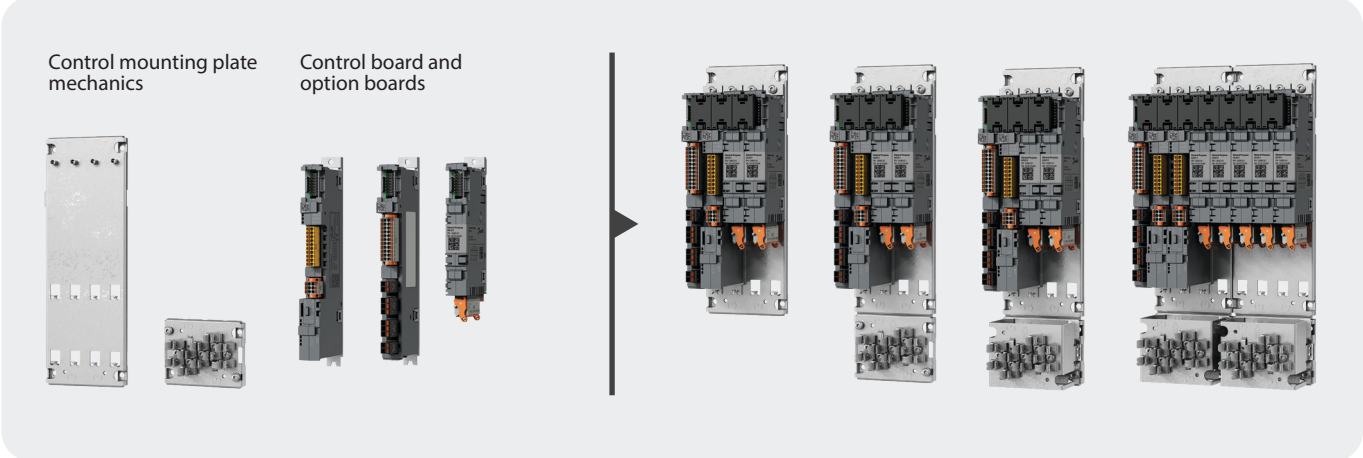
The purchase cost is lower since you only buy the necessary control options, saving excess unused functionality. The drive can reduce your costs further by substituting for a low-end PLC controller/system, thanks to its IEC 61131-based control architecture.

Features

- Expandable bus includes I/O, fieldbus, and expanded safety options
- Choose between a variety of control options
- Options are slot-independent with 6 option board slots available
- Integrated microSD card slot
- Integrated STO and SS1-t SIL3 functional safety for full power range
- Optional STO emergency stop button activates STO
- Programmable
- Use the same options interchangeably in all drives in the iC7 series

Technical information

- Integrated Ethernet communication interfaces
- Dual-channel STO SIL3 integrated as standard
- Optional fieldbus protocols
- Standard I/O: 6 x DI, 2 x DO, 2 x AI +/-10 V/0-20 mA, 1 x AO (0-10/4-20 mA), 2 x NO/NC RO, 1 x NO RO, 1 x Thermistor input
- Optical fiber as communication link with power module(s)



Features and benefits



Feature	Benefit
Robust by design, high uptime and quality	– Reliable in heavy-duty service
Segregated main cooling channel, (IP21 or IP54) and dedicated PCB area	– Extremely reliable in heavy-duty service
Wide range of pre-designed options	– Flexible to meet any application need
Heat management using heat pipe technology and segregated main cooling channel	– High power density, reduced footprint
Integrated options such as functional extensions, output filters, fuses and disconnects mean no extra external devices are required	– Save cost and time in installation
Installer-friendly design includes pluggable control terminals, easy-access power terminals, and easily replaceable fans	– Save cost and time in installation and service
Modular and scalable solutions for high powers Simplified spare unit handling	– Fast integration and serviceability
Pull-out of power unit without removing motor or mains cables, included with integration unit	– Fast and easy serviceability
Safe door-in-door access to the control compartment	– Safe and fast serviceability
Integrated functional safety: STO and SS1 (SIL 3) for full power range plus optional STO button on door	– Low-complexity functional safety

Ensuring you shine in the marketplace is our goal.
Learn how Danfoss supports your success here

Key specifications

6-pulse, low-harmonic or regenerative enclosed drives

Input	
Voltage rating	380-500 V AC, +10%/-15%
Current range	6-pulse: 206-588 A Low-harmonic & regenerative: 385-2510 A
Supply frequency	50/60 Hz
Switching on input [1]	6-pulse: 1-2 times per minute Low-harmonic and regenerative: Switch on twice at 60 s interval, followed by 10 minutes cooling-down period
Grid type	TN, TT, IT, Delta
Output	
Output frequency	0-599 Hz
Switching on output	Unlimited
Overload capacity	110/150% for 1 minute every 5 minutes [2]
Environmental conditions	
Protection rating	IP21/UL Type 1, IP54 UL Type 12
Rated temperature	-15 to 40 °C (5 to 104 °F)
Maximum temperature with derating	50 °C (122 °F)
Rated altitude	1000 m (3300 feet) or up to 3000 m (9800 ft) with derating For 690 V to 2000 m (6562 feet) with derating
Relative humidity	5-95% non condensing
Harmonic mitigation and THDi	
iC7-Automation, low harmonic and regenerative enclosed drives	Total harmonic distortion (nominal situation and undistorted network): THDi <5%

Functional Safety I/O	
STO	Dual-channel, with galvanic isolation
STO feedback	Single channel, with galvanic isolation
External supply	
Rating	24 V/2 A
Basic I/O	
Digital inputs [3]	6, single-ended
Relay outputs	3 • 2 x NO, NC • 1 x NO • 250 V AC 3 A max. (50/60 Hz) • 24 V DC 2
Analog inputs	2 • -20/0 to +20 mA or -10/0 to +10 V
Analog output	1 • 0-20 mA or 0-10 V resistive load
Thermistor input	1, isolated
Compliance	
Compliance	IEC 61800-5-1

[1] Refer to Design Guide for more information.
[2] 1 minute every 10 minutes, for frames FE9 and FE10
1 minute every 5 minutes, for all other frames
[3] 2 of the inputs can be reconfigured to outputs

Control options

Functional extensions	**Description**
General Purpose I/O OC7C0	General purpose I/O extension board (3xDI, 2xDO, 2xAI, 1xAO)
Relay Option OC7R0	Relay I/O extension board, with 3 relays
Encoder/Resolver Option OC7M0	Encoder/Resolver extension board (TTL, HTL, SinCos, SSI, HIPERFACE, EnDat, BiSS, resolver)
Temperature Measurement OC7T0	Temperature measurement extension board with 5 channels
I/O and Relay Option OC7C1	I/O extension

Ratings 6-pulse enclosed drives

380-440, 50/60 Hz, 3~

Model code	I_N	I_L	I_L-OL	I_{peak} (3s)	P_{typ} 400 V	I_H	I_H-OL	P_{typ} 400 V	Frame
	[A]	[A]	[A]	[A]	[kW]	[A]	[A]	[kW]	
iC7-60EA3N05-206A	206	206	227	289	110	170	255	90	**FE9**
iC7-60EA3N05-245A	245	245	270	351	132	206	309	110	**FE9**
iC7-60EA3N05-302A	302	302	333	417	160	245	368	132	**FE9**
iC7-60EA3N05-385A	385	385	424	514	200	302	453	160	**FE9**
iC7-60EA3N05-480A	480	480	528	655	250	385	578	200	**FE10**
iC7-60EA3N05-588A	588	588	647	816	315	480	720	250	**FE10**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 10 minutes for frames FE9 and FE10; 1 min every 5 min for all other frames
I_H: High overload base current, allows for 150% overload for 1 minute duration every 10 minutes for frames FE9 and FE10; 1 min every 5 min for all other frames
***OL**: Overload*

440-480, 50/60 Hz, 3~

Model code	I_N	I_L	I_L-OL	I_{peak} (3s)	P_{typ} 460 V	I_H	I_H-OL	P_{typ} 460 V	Frame
	[A]	[A]	[A]	[A]	[hp]	[A]	[A]	[hp]	
iC7-60EA3N05-206A	196	196	216	283	150	166	249	125	**FE9**
iC7-60EA3N05-245A	240	240	264	334	200	196	294	150	**FE9**
iC7-60EA3N05-302A	302	302	333	408	250	240	360	200	**FE9**
iC7-60EA3N05-385A	364	364	401	514	300	302	453	250	**FE9**
iC7-60EA3N05-480A	456	456	502	619	350	364	546	300	**FE10**
iC7-60EA3N05-588A	520	520	572	776	450	456	684	350	**FE10**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 10 minutes for frames FE9 and FE10; 1 min every 5 min for all other frames
I_H: High overload base current, allows for 150% overload for 1 minute duration every 10 minutes for frames FE9 and FE10; 1 min every 5 min for all other frames
***OL**: Overload*

480-500, 50/60 Hz, 3~

Model code	I_N	I_L	I_L-OL	I_{peak} (3s)	P_{typ} 500 V	I_H	I_H-OL	P_{typ} 500 V	Frame
	[A]	[A]	[A]	[A]	[kW]	[A]	[A]	[kW]	
iC7-60EA3N05-206A	196	196	216	283	132	166	249	110	**FE9**
iC7-60EA3N05-245A	240	240	264	334	160	196	294	132	**FE9**
iC7-60EA3N05-302A	302	302	333	408	200	240	360	160	**FE9**
iC7-60EA3N05-385A	364	364	401	514	250	302	453	200	**FE9**
iC7-60EA3N05-480A	456	456	502	619	315	364	546	250	**FE10**
iC7-60EA3N05-588A	520	520	572	776	355	456	684	315	**FE10**

I_L: Low overload base current, allows for 110% overload for 1 minute duration every 10 minutes for frames FE9 and FE10; 1 min every 5 min for all other frames
I_H: High overload base current, allows for 150% overload for 1 minute duration every 10 minutes for frames FE9 and FE10; 1 min every 5 min for all other frames
***OL**: Overload*

Ratings low-harmonic & regenerative enclosed drives

380-440, 50/60 Hz, 3~

Model code	I_N	I_L	I_L-OL	I_{peak} (3s)	P_{typ} 400 V	I_H	I_H-OL	P_{typ} 400 V	Frame
	[A]	[A]	[A]	[A]	[kW]	[A]	[A]	[kW]	
iC7-60EA3A05-385A	394	385	424	510	200	300	450	160	**AE10+IE10**
iC7-60EA3A05-480A	490	480	528	655	250	385	578	200	**AE10+IE10**
iC7-60EA3A05-590A	603	590	649	816	315	480	720	250	**AE10+IE10**
iC7-60EA3A05-658A	672	658	724	930	355	547	821	250	**AE11+IE11**
iC7-60EA3A05-730A	746	730	803	1031	400	606	909	315	**AE11+IE11**
iC7-60EA3A05-820A	838	820	902	1158	450	681	1022	355	**AE11+IE11**
iC7-60EA3A05-880A	899	880	968	1243	500	731	1097	400	**AE11+IE11**
iC7-60EA3A05-1000	1021	1000	1100	1411	560	830	1245	450	**2xAE10+2xIE10**
iC7-60EA3A05-1100	1123	1100	1210	1553	630	913	1370	500	**2xAE10+2xIE10**
iC7-60EA3A05-1260	1287	1260	1386	1785	710	1050	1575	560	**2xAE11+2xIE11**
iC7-60EA3A05-1450	1481	1450	1595	2057	800	1210	1815	630	**2xAE11+2xIE11**
iC7-60EA3A05-1710	1746	1710	1881	2414	900	1420	2130	710	**2xAE11+2xIE11**
iC7-60EA3A05-1960	2001	1960	2156	2771	1100	1630	2445	900	**3xAE11+3xIE11**
iC7-60EA3A05-2150	2195	2150	2365	3043	1200	1790	2685	1000	**3xAE11+3xIE11**
iC7-60EA3A05-2340	2389	2340	2574	3315	1300	1950	2925	1000	**3xAE11+3xIE11**
iC7-60EA3A05-2510	2563	2510	2761	3553	1400	2090	3135	1100	**3xAE11+3xIE11**

3H = 3~ low harmonic AFE
3A = 3~ regenerative, AFE

***I_L**: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
***I_H**: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
***OL**: Overload*

440-480, 50/60 Hz, 3~

Model code	I_N	I_L	I_L-OL	I_{peak} (3s)	P_{typ} 460 V	I_H	I_H-OL	P_{typ} 460 V	Frame
	[A]	[A]	[A]	[A]	[hp]	[A]	[A]	[hp]	
iC7-60EA3A05-385A	394	385	424	544	300	320	480	250	**AE10+IE10**
iC7-60EA3A05-480A	490	480	528	679	350	399	599	300	**AE10+IE10**
iC7-60EA3A05-590A	531	520	572	750	450	441	662	350	**AE10+IE10**
iC7-60EA3A05-658A	603	590	649	833	500	490	735	350	**AE11+IE11**
iC7-60EA3A05-730A	672	658	724	930	550	547	821	450	**AE11+IE11**
iC7-60EA3A05-820A	746	730	803	1031	600	606	909	500	**AE11+IE11**
iC7-60EA3A05-880A	838	820	902	1158	700	681	1022	550	**AE11+IE11**
iC7-60EA3A05-1000	940	920	1012	1299	750	764	1146	600	**2xAE10+2xIE10**
iC7-60EA3A05-1100	1052	1030	1133	1454	850	855	1283	650	**2xAE10+2xIE10**
iC7-60EA3A05-1260	1174	1150	1265	1632	950	960	1440	750	**2xAE11+2xIE11**
iC7-60EA3A05-1450	1328	1300	1430	1836	1100	1080	1620	850	**2xAE11+2xIE11**
iC7-60EA3A05-1710	1603	1570	1727	2227	1300	1310	1965	1100	**2xAE11+2xIE11**
iC7-60EA3A05-1960	1940	1900	2090	2686	1600	1580	2370	1300	**3xAE11+3xIE11**
iC7-60EA3A05-2150	2083	2040	2244	2890	1700	1700	2550	1300	**3xAE11+3xIE11**
iC7-60EA3A05-2340	2195	2150	2365	3043	1800	1790	2685	1500	**3xAE11+3xIE11**
iC7-60EA3A05-2510	2389	2340	2574	3315	1900	1950	2925	1600	**3xAE11+3xIE11**

3H = 3~ low harmonic AFE
3A = 3~ regenerative, AFE

***I_L**: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
***I_H**: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
***OL**: Overload*

Ratings low-harmonic & regenerative enclosed drives

480-500 V, 50/60 Hz, 3~

Model code	I_N	I_L	I_L-OL	I_{peak} (3s)	P_{typ} 500 V	I_H	I_H-OL	P_{typ} 500 V	Frame
	[A]	[A]	[A]	[A]	[kW]	[A]	[A]	[kW]	
iC7-60EA3A05-385A	394	385	424	544	250	320	480	200	**AE10+IE10**
iC7-60EA3A05-480A	490	480	528	679	315	399	599	250	**AE10+IE10**
iC7-60EA3A05-590A	531	520	572	750	355	441	662	315	**AE10+IE10**
iC7-60EA3A05-658A	603	590	649	833	400	490	735	315	**AE11+IE11**
iC7-60EA3A05-730A	672	658	724	930	450	547	821	355	**AE11+IE11**
iC7-60EA3A05-820A	746	730	803	1031	500	606	909	400	**AE11+IE11**
iC7-60EA3A05-880A	838	820	902	1158	560	681	1022	450	**AE11+IE11**
iC7-60EA3A05-1000	940	920	1012	1299	630	764	1146	500	**2xAE10+2xIE10**
iC7-60EA3A05-1100	1052	1030	1133	1454	710	855	1283	560	**2xAE10+2xIE10**
iC7-60EA3A05-1260	1174	1150	1265	1632	800	960	1440	630	**2xAE11+2xIE11**
iC7-60EA3A05-1450	1328	1300	1430	1836	900	1080	1620	710	**2xAE11+2xIE11**
iC7-60EA3A05-1710	1603	1570	1727	2227	1100	1310	1965	900	**2xAE11+2xIE11**
iC7-60EA3A05-1960	1940	1900	2090	2686	1300	1580	2370	1100	**3xAE11+3xIE11**
iC7-60EA3A05-2150	2083	2040	2244	2890	1400	1700	2550	1100	**3xAE11+3xIE11**
iC7-60EA3A05-2340	2195	2150	2365	3043	1500	1790	2685	1200	**3xAE11+3xIE11**
iC7-60EA3A05-2510	2389	2340	2574	3315	1600	1950	2925	1300	**3xAE11+3xIE11**

3H = 3~ low harmonic AFE
3A = 3~ regenerative, AFE

***I_L**: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
***I_H**: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
***OL**: Overload*

Voltage class 07 – mains voltage 525-550 V, 50/60 Hz, 3~

Model code	I_N	I_L	I_L-OL	I_{peak} (3s)	P_{typ} 525 V	I_H	I_H-OL	P_{typ} 525 V	Frame
	[A]	[A]	[A]	[A]	[kW]	[A]	[A]	[kW]	
iC7-60EA3A07-261A	267	261	288	369	160	217	326	132	**AE10+IE10**
iC7-60EA3A07-325A	332	325	358	459	200	270	405	160	**AE10+IE10**
iC7-60EA3A07-365A	373	365	402	544	250	320	480	200	**AE10+IE10**
iC7-60EA3A07-416A	425	416	458	589	315	346	519	250	**AE10+IE10**
iC7-60EA3A07-465A	475	465	512	657	315	386	579	250	**AE11+IE11**
iC7-60EA3A07-525A	537	525	578	742	355	436	654	315	**AE11+IE11**
iC7-60EA3A07-590A	603	590	649	833	400	490	735	355	**AE11+IE11**
iC7-60EA3A07-650A	664	650	715	918	450	540	810	400	**2xAE10+2xIE10**
iC7-60EA3A07-730A	746	730	803	1060	500	623	935	450	**2xAE10+2xIE10**
iC7-60EA3A07-820A	838	820	902	1156	560	680	1020	500	**2xAE10+2xIE10**
iC7-60EA3A07-945A	965	945	1040	1343	710	790	1185	560	**2xAE11+2xIE11**
iC7-60EA3A07-1060	1083	1060	1166	1496	800	880	1320	630	**2xAE11+2xIE11**
iC7-60EA3A07-1180	1205	1180	1298	1666	900	980	1470	710	**2xAE11+2xIE11**
iC7-60EA3A07-1300	1328	1300	1430	1836	1000	1080	1620	800	**3xAE11+3xIE11**
iC7-60EA3A07-1500	1532	1500	1650	2117	1100	1245	1868	900	**3xAE11+3xIE11**
iC7-60EA3A07-1770	1807	1770	1947	2499	1300	1470	2205	1100	**3xAE11+3xIE11**

3H = 3~ low harmonic AFE
3A = 3~ regenerative, AFE

***I_L**: Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
***I_H**: High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
***OL**: Overload*

Voltage class 07 – mains voltage 550-600 V, 50/60 Hz, 3~

Model code	I_N	I_L	I_L-OL	I_{peak} (3s)	P_{typ} 575 V	I_H	I_H-OL	P_{typ} 575 V	Frame
	[A]	[A]	[A]	[A]	[hp]	[A]	[A]	[hp]	
iC7-60EA3A07-261A	267	261	288	369	250	217	326	200	**AE10+IE10**
iC7-60EA3A07-325A	332	325	358	459	300	270	405	250	**AE10+IE10**
iC7-60EA3A07-365A	373	365	402	544	350	320	480	300	**AE10+IE10**
iC7-60EA3A07-416A	425	416	458	589	400	346	519	350	**AE10+IE10**
iC7-60EA3A07-465A	475	465	512	657	450	386	579	400	**AE11+IE11**
iC7-60EA3A07-525A	537	525	578	742	500	436	654	450	**AE11+IE11**
iC7-60EA3A07-590A	603	590	649	833	600	490	735	500	**AE11+IE11**
iC7-60EA3A07-650A	664	650	715	918	650	540	810	550	**2xAE10+2xIE10**
iC7-60EA3A07-730A	746	730	803	1060	750	623	935	600	**2xAE10+2xIE10**
iC7-60EA3A07-820A	838	820	902	1156	800	680	1020	700	**2xAE10+2xIE10**
iC7-60EA3A07-945A	965	945	1040	1343	950	790	1185	800	**2xAE11+2xIE11**
iC7-60EA3A07-1060	1083	1060	1166	1496	1100	880	1320	900	**2xAE11+2xIE11**
iC7-60EA3A07-1180	1205	1180	1298	1666	1200	980	1470	1000	**2xAE11+2xIE11**
iC7-60EA3A07-1300	1328	1300	1430	1836	1300	1080	1620	1100	**3xAE11+3xIE11**
iC7-60EA3A07-1500	1532	1500	1650	2117	1500	1245	1868	1300	**3xAE11+3xIE11**
iC7-60EA3A07-1770	1807	1770	1947	2499	1800	1470	2205	1500	**3xAE11+3xIE11**

3H = 3~ low harmonic AFE
3A = 3~ regenerative, AFE

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
OL: *Overload*

Voltage class 07 – mains voltage 600-690 V, 50/60 Hz, 3~

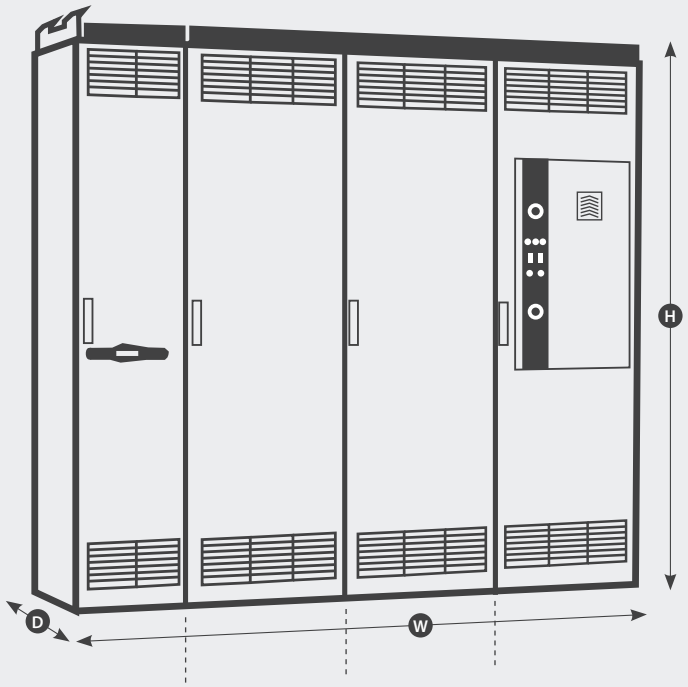
Model code	I_N	I_L	I_L-OL	I_{peak} (3s)	P_{typ} 690 V	I_H	I_H-OL	P_{typ} 690 V	Frame
	[A]	[A]	[A]	[A]	[kW]	[A]	[A]	[kW]	
iC7-60EA3A07-261A	267	261	288	369	250	217	326	200	**AE10+IE10**
iC7-60EA3A07-325A	332	325	358	459	315	270	405	250	**AE10+IE10**
iC7-60EA3A07-365A	373	365	402	544	355	320	480	250	**AE10+IE10**
iC7-60EA3A07-416A	425	416	458	589	400	346	519	315	**AE10+IE10**
iC7-60EA3A07-465A	475	465	512	657	450	386	579	355	**AE11+IE11**
iC7-60EA3A07-525A	537	525	578	742	500	436	654	400	**AE11+IE11**
iC7-60EA3A07-590A	603	590	649	833	560	490	735	450	**AE11+IE11**
iC7-60EA3A07-650A	664	650	715	918	630	540	810	500	**2xAE10+2xIE10**
iC7-60EA3A07-730A	746	730	803	1060	710	623	935	560	**2xAE10+2xIE10**
iC7-60EA3A07-820A	838	820	902	1156	800	680	1020	630	**2xAE10+2xIE10**
iC7-60EA3A07-945A	965	945	1040	1343	900	790	1185	710	**2xAE11+2xIE11**
iC7-60EA3A07-1060	1083	1060	1166	1496	1000	880	1320	800	**2xAE11+2xIE11**
iC7-60EA3A07-1180	1205	1180	1298	1666	1100	980	1470	900	**2xAE11+2xIE11**
iC7-60EA3A07-1300	1328	1300	1430	1836	1200	1080	1620	1000	**3xAE11+3xIE11**
iC7-60EA3A07-1500	1532	1500	1650	2117	1400	1245	1868	1200	**3xAE11+3xIE11**
iC7-60EA3A07-1770	1807	1770	1947	2499	1600	1470	2205	1400	**3xAE11+3xIE11**

3H = 3~ low harmonic AFE
3A = 3~ regenerative, AFE

I_L: *Low overload base current, allows for 110% overload for 1 minute duration every 5 minutes*
I_H: *High overload base current, allows for 150% overload for 1 minute duration every 5 minutes*
OL: *Overload*

Cabinet options

Mains input device	+GAXX	None
	+GACO	Mains contactor and switch
	+GAMS	Mains switch
	+GACB	Air circuit breaker fixed
Grounding device provision	+GCXX	None
	+GCEP	Provision for grounding device
	+GCES	Grounding switch
Motor heater control	+IAXX	None
	+IAMH	Yes
Cabinet heater	+IBXX	None
	+IBCH	Yes
Motor fan control	+ICXX	None
	+ICFC	Motor fan control
	+ICF1	Motor fan ctrl/supply 2.5-4 A
	+ICF2	Motor fan ctrl/supply 4-6.3 A
	+ICF3	Motor fan ctrl/supply 6.3-10 A
	+ICF4	Motor fan ctrl/supply 10-16 A
Motor brake control	+IDXX	None
	+IDBC	Motor brake control
Control power supply	+IFXX	None
	+IFCS	24 VDC
Service socket	+IGXX	None
	+IGS0	230 VAC socket CEE 7/3
	+IGS1	115 VAC socket, US
	+IGS2	230 VAC socket, UK
Auxillary voltage supply	+IHXX	None
	+IHAT	AC voltage transformer
	+IHAS	AC supply terminals
Door signal lights	+IIXX	None
	+IICD	Run, ready, fault
Emergency stop button	+ILXX	None
	+ILSS	STO/SS1 push button on door
Mains cabling direction	+KCIB	Bottom-entry
	+KCIT	Top-entry
	+KDOB	Bottom-entry
	+KDOT	Top-entry
Cable entry plate	+KFXX	With standard glands
	+KFCP	Blank plate without holes (UL)
Output filter	+MAXX	None
	+MAC2	Common-mode Filter
	+MAU1	dU/dt Filter
	+MAU2	dU/dt + CM Filter
Air-cooling options	+OAXX	Standard
	+OAOF	Cooling air outlet flange
	+OABC	Back-channel cooling
Maintenance options	+QAXX	None
	+QALS	Lifting support for power unit



Dimensions

		6-pulse enclosed drives		Low-harmonic & regenerative enclosed drives				
Frame		**FE09**	**FE10**	**AE10 + IE10**	**AE11 + IE11**	**2 x AE10 + 2 x IE10**	**2 x AE11 + 2 x IE11**	**3 x AE11 + 3 x IE11**
[mm]	Width	400	600	800	1200	2200	2400	3200
	Height	2300 [1]	2300 [1]	2300 [1] [2]	2300 [1] [2]	2300 [1] [2]	2300 [1] [2]	2300 [1] [2]
	Depth	600	600	600	600	600	600	600
[in]	Width	15.7	23.6	31.5	47.2	86.6	94.5	126
	Height	90.6 [1]	90.6 [1]	90.6 [1] [2]	90.6 [1] [2]	90.6 [1] [2]	90.6 [1] [2]	90.6 [1] [2]
	Depth	23.6	23.6	23.6	23.6	23.6	23.6	23.6

[1] With 200 mm/7.8 in plinth and lifting rails, without lifting rails -100 mm/4.0 in
[2] If IP21 cabinet total height is 2400 mm/94.5 in

Model code overview: iC7-Automation enclosed drives

For more detailed information, refer to the Design Guide

[1-6]		[7]	[8]	[9-10]		[11-12]		[14-17]		[18-20]		[21-22]		1]
iC7-60	–	**E**	–	**A**	–		–		–		–		–	**.....**

[1-6] Product group *(character 1-6)*	
iC7-60	Indication of product group performance
[7] Product category *(character 7)*	
E	Enclosed Drives
[8] Cooling method *(character 8)*	
A	Air-cooled
[9-10] Product type *(character 9-10)*	
3N	6-pulse rectifier
3A	3~ regenerative (AFE)
3H	3~ low harmonic (AFE)
[11-12] Voltage rating *(character 11-12)*	
05	380-500 V AC
07	525-690 V AC
[13-17] Nominal Amp rating [2] *(character 14-17)*	
-206A	206 A
-245A	245 A
-300A	300 A
...	...
-2510	2510 A

[1] *+codes identifying options*
[2] *See rating tables on pages 58-61*

[18-20] Protection rating *(character 18-20)*		**Enclosed drives**
E21	IP21	•
E54	IP54	•
[21-22] EMC Class *(character 21-22)*		
F2	C2 category: Public & industrial environment	
F3	C3 category: industrial environment	•
F4	C4 category: System Component (IT Network)	•
[1]] +code group		
+Axxx	Optional power hardware	
+Bxxx	Control hardware	
+Cxxx	Control options	
+Dxxx	Application software and additional functionality	
+Exxx	Customized settings *(for reference only)*	

+MAxx Ouput filter options

Model code	Selection description	Enclosed drives
+MAXX	None	•
+MAC2	Common mode filter	•
+MAU1	dU/dt filter	•
+MAU2	dU/dt and CM filter	•

+BAxx Control hardware: Communication interface, X1/X2

Model code	Selection description	Enclosed Drives
+BAEL	Ethernet port, no protocol	•
+BAPR	PROFINET RT OS7PR	•
+BAMT	Modbus TCP OS7MT	•
+BAIP	Ethernet/IP OS7IP	•

+Cxxx Control options (Option slots A to F)

Model code	Selection description	Open slots A-E (Inverter)	Open slot F (Active Front End)
+CXXX	None, without mounting plate	•	–
+CXX0	None	•	–
+CXC0	General Purpose I/O OC7C0	•	–
+CXC1	I/O and Relay Option OC7C1	•	–
+CXR0	Relay Option OC7R0	•	–
+CXM0	Encoder/Resolver Option OC7M0	• [3]	–
+CXT0	Temperature Measurement OC7T0	•	–

[3] *Encoder/Resolver option only in slot A and B*
See full list of options for each +code group in Design Guide

• indicates a standard selection
A dash (–) indicates that the selection is not available

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Some functionalities listed in this fact sheet are for future implementation

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