

Need an intelligent VFD for fast integration?

Highlights

- > Ultra compact
- > Modular and configurable variable frequency drive (VFD)
- > STO and SS1-t 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. Activate new fieldbus by license key
- > Easy cabinet integration using integration unit
- > High-torque machine performance
- > Superior motor control

iC7-Automation air-cooled system modules deliver high torque performance in an ultra compact format. These modules give you a unique advantage in optimizing installation footprint, speeding up integration, and reducing costs more than you dreamed possible.

Current and supply voltage

- Inverter
385-4870 A_{IL} – 380-500 V AC
261-4720 A_{IL} – 525-690 V AC
- Active Front-end
317-4900 A_{IL} – 380-500 V AC
236-4240 A_{IL} – 525-690 V AC
- Non-regenerative Front-end
694-6260 A_{IL} – 380-500 V AC
504-5750 A_{IL} – 525-690 V AC



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 safety
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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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 $I_{cc} \leq 100$ kA	The maximum short-circuit current $I_{cc} \leq 100$ kA
Overvoltage category according to IEC 61800-5-1	– Category III	– Category III
Voltage imbalance	– AFE: + 3%	– AFE: + 3%
Motor connection (Inverter)		
Output voltage	<ul style="list-style-type: none"> – Voltage class 05: 400/460/500 V – Voltage class 07: 0-525/575/690 V 	
Nominal DC voltage	<ul style="list-style-type: none"> – Voltage class 05: 465-740 V DC – Voltage class 07: 640-1100 V DC 	
Output frequency	– 0-590 Hz	
Switching frequency	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – U/f control – VVC+ (Vector Voltage Control) – FVC+ (Flux Vector Control) 	
Motor and generator types supported	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – 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	<ul style="list-style-type: none"> – -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: <ul style="list-style-type: none"> – 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)	<ul style="list-style-type: none"> – 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)	<ul style="list-style-type: none"> – 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 conditions: 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	

Dimensions and weight ¹⁾: 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	251/349
[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	554/769

¹⁾ Preliminary values subject to validation

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

Dimensions and weight ²⁾: Inverter, AFE & NFE modules with short integration unit

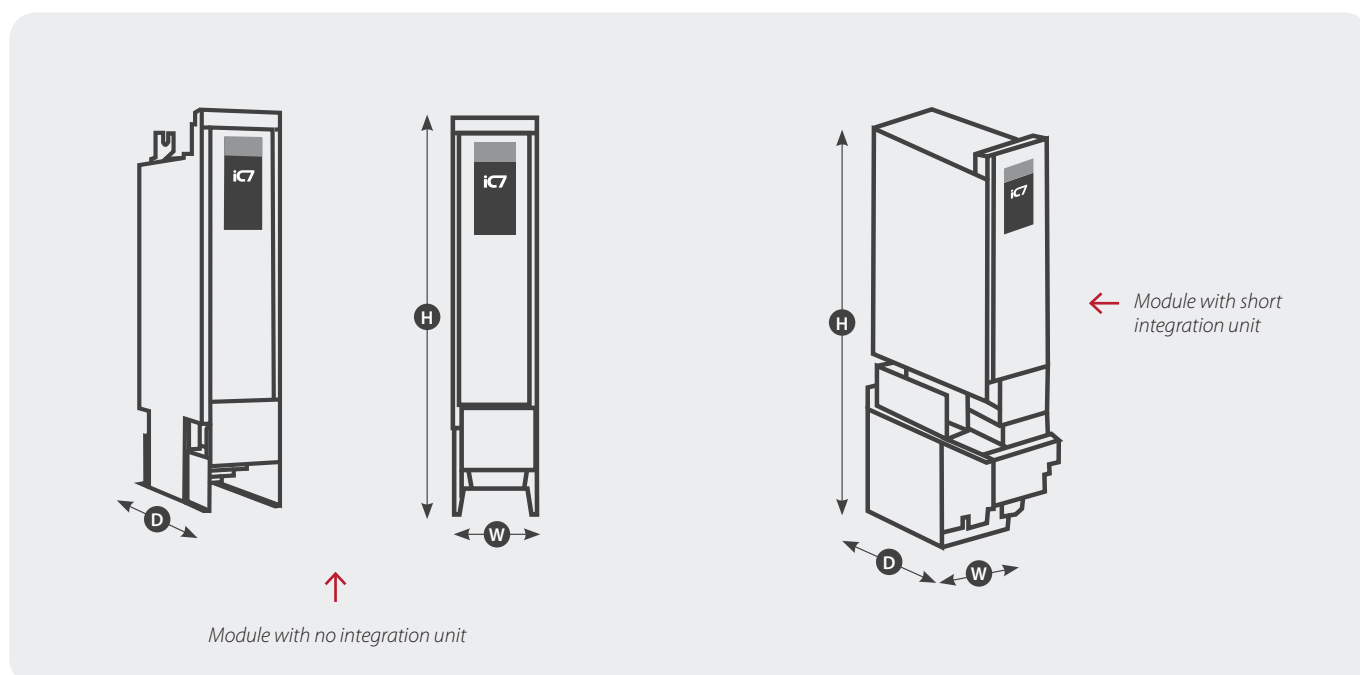
Module type		Inverter with integration unit		AFE with integration unit		NFE with integration unit
Frame		IR10	IR11	AR10	AR11	NR11
[mm]	Width	235	235	235	235	235
	Height	1302	1302	921	921	921
	Depth	553	553	553	553	553
[kg]	Weight	90	100	72	82	125-145
[in]	Width	9.3	9.3	9.3	9.3	9.3
	Height	51.3	51.3	36.3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

²⁾ Preliminary values subject to validation

Weight values are for module with empty integration unit, excluding filter weight.

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

Weight of NFE module varies with rating and integration unit variant.



Dimensions and weight ²⁾: 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	9.3	9.3
	Height	60.2	60.2	60.2	60.2	60.2
	Depth	21.8	21.8	21.8	21.8	21.8
[lb]	Weight	202.8	224.9	172	194	276-320

²⁾ Preliminary values subject to validation

Weight values are for module with empty integration unit, excluding filter weight.

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Weight of NFE module varies with rating and integration unit variant.

