



TYPE APPROVAL CERTIFICATE
No. ELE105017XG/003

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

<i>Description</i>	FREQUENCY CONVERTERS
<i>Type</i>	Series FC-300
<i>Applicant</i>	DANFOSS POWER ELECTRONICS A/S ULSNAES 1 DK-6300 GRAASTEN DENMARK
<i>Manufacturer</i>	DANFOSS, LLC
<i>Place of manufacture</i>	4401 N. BELL SCHOOL RD., 61111 LOVES PARK (IL), U.S.A ULSNAES 1, DK-6300 GRAASTEN, DENMARK
<i>Reference standards</i>	Rules for the classification of ships.- Part C - Machinery, systems and fire protection. - Ch.3, Sect. 6, Table 1

Issued in **HAMBURG** on **July 24, 2017**. *This Certificate is valid until* **July 23, 2022**



RINA Services S.p.A.
Giuseppe Russo

This certificate consists of this page and 1 enclosure



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Series FC-300

Product description:

The VLT[®] Automation Drive Series FC-300 series (FC-301/302) are frequency converter for asynchronous motors for use in various marine applications.

FC-300: 200-240V

Power rating [kW]	Enclosure type			
	IP20 (*1)	IP21 (*2)	IP55 (*3)	IP66 (*4)
FC-300				
0,25	A2	A2 (*5)	A4+A5	A4+A5
0,37				
0,55				
0,75				
1,1				
1,5				
2,2	A3	A3 (*5)	A5	A5
3,0				
3,7				
5,5	B3	B1	B1	B1
7,5				
11	B4	B2	B2	B2
15		C3	C1	C1
18,5	C4		C2	C2
22				
30				
37				

FC-300: 380-480/500V

Power rating [kW]	Enclosure type			
	IP20 (*1)	IP21 (*2)	IP55 (*3)	IP66 (*4)
FC-300				
0,37	A2	A2 (*5)	A4+A5	A4+A5
0,55				
0,75				
1,1				
1,5				
2,2				
3,0	A3	A3 (*5)	A5	A5
4,0				
5,5				
7,5	B3	B1	B1	B1
11				
15	B4	B2	B2	B2
18,5				
22	C4	C2	C2	C2
30				
37				
45				
55	C4	C2	C2	C2
75				



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Series **FC-300**

FC-300: 525-690V

Power rating [kW]	Enclosure type			
	IP20 (*1)	IP21 (*2)	IP55 (*3)	IP66 (*4)
FC-300				
1,1	A3	NA	NA	NA
1,5				
2,2				
3,0				
3,7				
5,5				
7,5	B4	B2	B2	B2
11				
15				
18		C2	C2	C2
22				
30				
37	C3			
45	D3h			
55				
75				

(*1) IP20/Panel mount. All IP20 versions can be upgraded to IP21 with optional kit

(*2) IP21/NEMA Type 1

(*3) IP55/NEMA Type 12

(*4) IP66/NEMA Type 4X

(*5) IP20/Panel with IP21 upgrade kit

FC-302: 380-480/500V

Power rating [kW]	Enclosure type					
	6-pulse			12-pulse	Low Harmonic Drive (LHD)	
FC-302	IP00 (*1)	IP20 (*1)	IP21 / IP54 (*2)			
90	NA	D3H	D1h/D5h/D6h	NA	NA	
110						D1n
132					D2n	
160			D4h		D2h/D7h/D8h	
200	E2	E3h	E1/E1h	F8/F9	E9	
250						
315						
355						
400	NA	E4h	F1/F3/E2h	F10/F11	F18	
450						
500			NA	F1/F3		
560						
630						
710			F2/F4	F12/F13	NA	
800						



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Series **FC-300**

FC-302: 525-690V

Power rating [kW]	Enclosure type			
	6-pulse			12-pulse
FC-302	IP00 (*1)	IP20 (*1)	IP21 / IP54 (*2)	
55	NA	D3h	D1h/D5h/D6h	
75			D4h	D2h/D7h/D8h
90				
110				
132				
160				
200				
250	E2	E3h	E1/E1h	
315			F8/F9	
355				
400				
450				
500				
560				
630	NA	E4h	F1/F3/E2h	
710			F10/F11	
800		NA		
900			F2/F4	
1000			F12/F13	
1200				

(*1) IP00/IP20/Panel mount.

(*2) IP21/NEMA Type 1; IP54/NEMA Type 12

Technical data: (In accordance with Danfoss design guide)

Power supply: 200-240V / 380-480V / 525-690V, 50/60Hz

Voltage variation: +10 %, -15% reduced power rating

Frequency variation: A, B and C frames: +-10%; D, E and F frames: +-5%

Output frequency: A, B and C frames: 0 - 590 Hz; D, E and F frames: 0 - 590 Hz

Temperature range in operation: 0 - 45°C, 46-55°C with current derating of 1.5 %/°C.

Protection class: IP00 / 20 / 21 / 54 / 55 / 66

Documents and drawings:

User manuals: - MG16O102 dated 01/2017; MG22A102 dated 01/2017; MG38A102 dated 01/2017;

Drawings: - 177r0659 dated 9/15/16; 177r0673 dated 01/25/2017; 177r0674 dated 01/25/2017; 177r0675 dated 01/25/2017;

- 177r0676 dated 01/25/2017;

Test reports:

Checklist for visual inspection 4001PRT2 00734665 Rev. 2.10 dated 2017-01-18;

Danfoss A/S: - 00715502 Rev. A dated 2013-07-30; 00734306 Rev. A dated 2017-01-12; 00734307 Rev. A dated 2017-01-13;

- 00734308 Rev. A dated 2017-01-13; 00734309 Rev. A dated 2017-01-13; 00734724 dated 2017-01-26;

- 00735629 Rev. A dated 2017-03-16; 00735840 dated 2017-03-27; P4001 dated 3/15/2017;

- P4001 Rev. A dated 2017-01-10; P7020 dated 2015-07-10; tr4001 dated 12-09-16;

Datasyst Engineering & Testing Services Inc.: - D15-15766 Rev. A dated July 29,2013; D15-17445 dated August 17,2016;

Elite Electronic Engineering Inc.: - 1604970-01 Rev.B dated January 17, 2017;

TÜV Rheinland: - 19645766001 dated 11 Jan 2017; 19645767001 dated 11 Jan 2017;

UL: - 00733941; 11494250A dated December 16,2016; 11494250B dated December 16,2016;

- 4786962025-S1-1 dated 9 July 2015; Break Down of Component_Test DataSheet;



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Series FC-300

Manufacturing sites:

DANFOSS, LLC
4401 N. BELL SCHOOL RD.
61111 LOVES PARK (IL)
U.S.A.

DANFOSS DRIVES A/S
ULSNAES 1
6300 GRAASTEN
DANMARK

Remarks:

- The products fulfill EC-Code: EC21.
- All changes in software are to be recorded as long as the system is in use on board. Major changes in the software are to be approved before being installed in the converter.
- Converters EMC classed C3 according to IEC 61800-3 can be installed in "special distribution zone" and "general power distribution zone" in accordance with IEC 60533 provided precautions are taken to attenuate these effects on the distribution system, so the safe operation is assured.

This certificate replaces and annuls the previous certificate ELE030414XG/003.

HAMBURG July 24, 2017