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## MANUFACTURER'S DECLARATION

**Danfoss A/S**  
Danfoss Drives

The below listed national and international standards were type tested for the :  
VLT FC series FC-301,FC-302, FC-102, FC103 and FC-202.

### 1. Product Safety, Test overview:

No	Test	IEC 61800-5-1 ed. 2.1: 2016	IEC 61800-5-1 ed. 3.0: 2022	UL508C ed. 3: 2002	UL 61800-5-1 ed. 2.0: 2022	CSA 22.2 no. 274:17
1	<b>General verification</b>					
2	Visual inspection	5.2.1	5.2.1		5.2.1	
3	<b>Mechanical tests</b>					
4	Clearance and creepage distances test	5.2.2.1	5.2.2.1		5.2.2.1	4.13.1
5	Non-accessibility test	5.2.2.3	5.2.2.2		5.2.2.3	6.15.11
6	Ingress protection test (IP rating) / Enclosure integrity	5.2.2.4	5.2.2.3		5.2.2.4	
7	Atomized water test		5.2.2.3.2			
8	IEC 60529 enclosure category 1 or 2 test for IP5X		5.2.2.3.3			
9	Accumulation of water test		5.2.2.3.4			
10	Steady force test, 30 N	5.2.2.5.2	5.2.2.4.2.2			6.15.10
11	Steady force test, 250 N	5.2.2.5.2	5.2.2.4.2.3		5.2.2.5.2	6.15.10

Date: 25 August 2025 Place of issue: Graasten, DK	Issued by  <b>Signature:</b> <b>Name: Peder Schmidt Spek</b> <b>Title: Product Manager</b>	Date: 27 August 2025 Place of issue: Graasten, DK	Approved by  <b>Signature:</b> <b>Name: Mari Haapala</b> <b>Title: Vice President</b>
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12	Impact test	5.2.2.5.3	5.2.2.4.3		5.2.2.5.3	6.15.2
13	Drop test		5.2.2.4.4			
14	Mould stress relief distortion test		5.2.2.4.5		ANNEX DVD	6.23
15	Wall or ceiling mounted test		5.2.2.5			
16	Handles and manual control securement test		5.2.2.6			
17	Strain relief test		5.2.2.7	53a		
18	Isolating means and interlock integrity test		5.2.2.8			
19	Acoustic noise test		5.2.2.9			
20	<b>Electrical tests</b>					
21	Impulse withstand voltage test	5.2.3.1	5.2.3.2		5.2.3.1	6.20
22	Alternative to impulse withstand voltage test		5.2.3.3			
23	AC or DC voltage test	5.2.3.2	5.2.3.4	44	5.2.3.2	6.3
24	Partial discharge test	5.2.3.3	5.2.3.5		5.2.3.3	
25	Protective impedance test	5.2.3.4	5.2.3.6		5.2.3.4	
26	Touch current measurement test	5.2.3.5	5.2.3.7	53c	5.2.3.5	
27	Capacitor discharge test	5.2.3.7	5.2.3.8		5.2.3.7	6.18
28	Limited power source test		5.2.3.9	53	DVC.2	
29	Temperature rise test	5.2.3.8	5.2.3.10	40	5.2.3.8	6.2
30	Protective equipotential bonding test	5.2.3.9	5.2.3.11		5.2.3.9	6.13
31	Input test		5.2.3.12			
32	Thin sheet material test		5.2.3.13			
33	Test procedure for separable thin sheet material		5.2.3.13.2			
34	Mandrel test		5.2.3.13.3			
35	Test procedure for determination of working voltage		5.2.3.14			
36	Internal SPD monitoring test		5.2.3.15			

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37	<b>Abnormal operation and simulated faults tests</b>					
38	Protective equipotential bonding short-circuit withstand test		5.2.4.4			
39	Output short-circuit test	5.2.3.6.3	5.2.4.5	45	5.2.3.6.3	6.6 and 6.7
40	Electronic motor overload protection test		5.2.4.6.4	43	5.2.8	6.4
41	Electronic motor thermal memory retention trip test		5.2.4.6.5	43	5.2.8	6.4
42	Electronic motor thermal memory retention loss of power test		5.2.4.6.6	43	5.2.8	6.4
43	Electronic motor thermal speed sensitivity test		5.2.4.6.7	43	5.2.8	6.4
44	Circuit functionality evaluation test		5.2.4.7		5.2.9	
45	Current limiting test		5.2.4.8	41.6	5.2.4.5.6DV	
46	Output overload test		5.2.4.9			6.5
47	Breakdown of components test	5.2.3.6.4	5.2.4.10	50	5.2.3.6.4	6.12
48	PWB short-circuit test	5.2.2.2	5.2.4.11	52	5.2.2.2	6.22
49	Loss of phase test	5.2.4.4	5.2.4.12	41.3	5.2.4.4	
50	Cooling failure tests		5.2.4.13			
51	Inoperative blower motor test	5.2.4.5.2	5.2.4.13.2	41.4	5.2.4.5.2	
52	Clogged filter test	5.2.4.5.3	5.2.4.13.3	41.5	5.2.4.5.3	
53	Loss of coolant test	5.2.4.5.4	5.2.4.13.4		5.2.4.5.4	
54	Covering of openings for cooling air test		5.2.4.13.5			
55	<b>Material tests</b>					
56	High current arcing ignition test	5.2.5.1	5.2.5.2		5.2.5.1	
57	Glow-wire test	5.2.5.2	5.2.5.3		5.2.5.2	
58	Hot wire ignition test	5.2.5.3	5.2.5.4		5.2.5.3	
59	Flammability test	5.2.5.4	5.2.5.5		5.2.5.4	6.15.1
60	Cemented joints test		5.2.5.6			
61	UV resistance test		5.2.5.7			

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62	<b>Environmental tests</b>					
63	Dry heat test (steady state)	5.2.6.3.1	5.2.6.3.2		5.2.6.3.1	
64	Cold test (steady state)		5.2.6.3.3			
65	Damp heat test (steady state)	5.2.6.3.2	5.2.6.3.4		5.2.6.3.2	
66	Damp heat test (cyclic)		5.2.6.3.5			
67	Vibration test	5.2.6.4	5.2.6.4		5.2.6.4	
68	Salt mist test		5.2.6.5			
69	Dust test		5.2.6.6			
70	Sand test		5.2.6.7			
71	Hydrostatic pressure test	5.2.7	5.2.7		5.2.7	
72	Electromagnetic fields (EMF)		5.2.8			

**2. Test overview, Electromagnetic Compatibility(EMC) : IEC 61800-3**

No.	Area	Test/Phenomenon	Clause	Referenced standard
1	Immunity (LF)	Harmonics & commutation notches	5.2.2	IEC 61000-2-2, IEC 61000-2-4, IEC 60146-1-1, IEC 61000-4-13
2	Immunity (LF)	Voltage deviations, dips, short	5.2.3	IEC 61000-4-11, IEC 61000-4-34, IEC TR 61000-2-8
3	Immunity (LF)	Voltage unbalance & frequency variations	5.2.4	IEC 61000-2-2, IEC 61000-2-4
4	Immunity (HF)	ESD (enclosure)	5.3.2 / 5.3.3 (Tables 13, 14)	IEC 61000-4-2
5	Immunity (HF)	Radiated RF immunity (enclosure) 80 - 6000 MHz	5.3.2 / 5.3.3 (Tables 13, 14)	IEC 61000-4-3
6	Immunity (HF)	EFT/Burst (power ports, interfaces, signal)	5.3.2 / 5.3.3 (Tables 13, 14)	IEC 61000-4-4
7	Immunity (HF)	Surge (power, aux ports)	5.3.2 / 5.3.3 (Tables 13, 14)	IEC 61000-4-5
8	Immunity (HF)	Conducted RF (common-mode)	5.3.2 / 5.3.3 (Tables 13, 14)	IEC 61000-4-6
9	Emission (LF)	Harmonics & interharmonics	6.2.3	IEC 61000-3-2 , IEC 61000-3-12, IEC TR 61000-3-6 (system)
10	Emission (LF)	Voltage fluctuations (flicker)	6.2.4	IEC 61000-3-3 , IEC 61000-3-11, IEC 61000-2-4
11	Emission (HF)	Conducted emission, power port (C1,C2)	6.4.1.1 (Table 16)	CISPR 11/16, CISPR 16-1-2
12	Emission (HF)	Radiated emission, enclosure (C1,C2), 30 -	6.4.1.3 (Table 17)	CISPR 11/16, CISPR 16-1-4
13	Emission (HF)	Conducted emission, power port (C3)	6.4.2.2 (Table 19)	CISPR 11/16
14	Emission (HF)	enclosure (C3), 30 - 6000MHz	6.4.2.4 (Table 20)	CISPR 11/16

**3. Test overview, Functional Safety : IEC 61800-5-2 :**

No	Test	Requirements	Standards
1	<b>Functional Test</b>	STO	IEC 61508-1, IEC 61508-2, EN ISO 13849-1, 61800-5-2, EN IEC 61326-3-1, EN IEC 61000-6-7, EN IEC 61131-2, EN IEC 61131-2
2	<b>EMC</b>		
3	Electromagnetic Immunity testing	Clause 9.3/Appendix E	IEC 61800-3
4	Thermal Immunity Testing	9.4.2 Functional thermal test 9.4.3 Component thermal test	IEC 61800-5-1
5	Mechanical Immunity Testing	9.5.2 Vibration test 9.5.3 Shock Test	9.5.2 IEC 61800-5-1 9.5.3 IEC 61800-2

**4. Test overview, Others :**

No	Test	
1	Voltage Sags, SEMI F47	IEC 61000-4-34