

---

# Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

<b>Manufacturer</b>	<b>VACON OY</b>
<b>Address</b>	Member of the Danfoss Group, Runsorintie 7, Vaasa, 65380, Finland
<b>Type</b>	Electronic Frequency Convertor
<b>Description</b>	Frequency converter TYPE: Vacon 100 series Vacon 100X series
<b>Trade Name</b>	Vacon 100 series, Vacon 100X series
<b>Application</b>	Marine, offshore and industrial use in environmental categories ENV1 and ENV2 as detailed in Lloyd's Register Test Specification No. 1: July 2015.
<b>Specified Standard</b>	IEC/EN 61800-5-1: 2007 IEC/EN 61800-3: 2004 +A1: 2012 Manufacturer's Specification IACS requirements E10 (1991/Rev. 7: Oct. 2018)
<b>Ratings</b>	refer to the Appendix for details



---

**Thorsten Wolff**

Senior Specialist to Lloyd's Register EMEA  
A member of the Lloyd's Register group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

---

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

---

## Type Approval Certificate

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

**Previous Version:** 16 / 20013 (E1)

The Design Appraisal Document HTS/ETS 41051-21/HN/TW and its supplementary Type Approval Terms and Conditions form part of this Certificate.

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

---

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



## Appendix

RATINGS		Vacon 100 series				
Type Vacon 100-3L-	Current rating 40°C continuous current $I_{Lout}$	Frame size/enclosure protection class	Mains voltage	Frequency	Light Overload Current at 40°C	Heavy Overload Current at 50°C
0003-2	3.7A	MR4, IP21, IP54	208-240V	50-60Hz	3.7A	2.6A
0004-2	4.8A	MR4, IP21, IP54	208-240V	50-60Hz	4.8A	3.7A
0007-2	6.6A	MR4, IP21, IP54	208-240V	50-60Hz	6.6A	4.8A
0008-2	8A	MR4, IP21, IP54	208-240V	50-60Hz	8A	6.6A
0011-2	11A	MR4, IP21, IP54	208-240V	50-60Hz	11A	8A
0012-2	12.5A	MR4, IP21, IP54	208-240V	50-60Hz	12.5A	9.6A
0018-2	18A	MR5, IP21, IP54	208-240V	50-60Hz	18A	12.5A
0024-2	24A	MR5, IP21, IP54	208-240V	50-60Hz	24A	18A
0031-2	31A	MR5, IP21, IP54	208-240V	50-60Hz	31A	25A
0048-2	48A	MR6, IP21, IP54	208-240V	50-60Hz	48A	31A
0062-2	62A	MR6, IP21, IP54	208-240V	50-60Hz	62A	48A
0075-2	75A	MR7, IP21, IP54	208-240V	50-60Hz	75A	62A
0088-2	88A	MR7, IP21, IP54	208-240V	50-60Hz	88A	75A
0105-2	105A	MR7, IP21, IP54	208-240V	50-60Hz	105A	88A
0140-2	140A	MR8, IP00, IP21, IP54	208-240V	50-60Hz	140A	114A
0170-2	170A	MR8, IP00, IP21, IP54	208-240V	50-60Hz	170A	140A
0205-2	205A	MR8, IP00, IP21, IP54	208-240V	50-60Hz	205A	170A
0261-2	261A	MR9A, IP00, IP21, IP54	208-240V	50-60Hz	261A	211A
0310-2	310A	MR9A, IP00, IP21, IP54	208-240V	50-60Hz	310A	251A
0003-5	3.4A	MR4, IP21, IP54	380-500V	50-60Hz	3.4A	2.6A
0004-5	4.8A	MR4, IP21, IP54	380-500V	50-60Hz	4.8A	3.4A
0005-5	5.6A	MR4, IP21, IP54	380-500V	50-60Hz	5.6A	4.3A
0008-5	8A	MR4, IP21, IP54	380-500V	50-60Hz	8A	5.6A
0009-5	9.6A	MR4, IP21, IP54	380-500V	50-60Hz	9.6A	8A
0012-5	12A	MR4, IP21, IP54	380-500V	50-60Hz	12A	9.6A
0016-5	16A	MR5, IP21, IP54	380-500V	50-60Hz	16A	12A
0023-5	23A	MR5, IP21, IP54	380-500V	50-60Hz	23A	16A
0031-5	31A	MR5, IP21, IP54	380-500V	50-60Hz	31A	23A
038-5	38A	MR6, IP21, IP54	380-500V	50-60Hz	38A	31A
0046-5	46A	MR6, IP21, IP54	380-500V	50-60Hz	46A	38A
0061-5	61A	MR6, IP21, IP54	380-500V	50-60Hz	61A	46A
0072-5	72A	MR7, IP21, IP54	380-500V	50-60Hz	72A	61A

### RATINGS (continues)

Type	Current rating 40°C continuous current I <sub>Lout</sub>	Frame size/enclosure protection class	Mains voltage	Frequency	Light Overload Current at 40°C	Heavy Overload Current at 50°C
0087-5	87A	MR7, IP21, IP54	380-500V	50-60Hz	87A	72A
0105-5	105A	MR7, IP21, IP54	380-500V	50-60Hz	105A	87A
0140-5 <sup>(1)</sup>	140A	MR8, IP00, IP21, IP54	380-500V	50-60Hz	140A	105A
0170-5 <sup>(1)</sup>	170A	MR8, IP00, IP21, IP54	380-500V	50-60Hz	170A	140A
0205-5 <sup>(1)</sup>	205A	MR8, IP00, IP21, IP54	380-500V	50-60Hz	205A	170A
0261-5 <sup>(1)</sup>	261A	MR9A, IP00, IP21, IP54	380-500V	50-60Hz	261A	205A
0310-5 <sup>(1)</sup>	310A	MR9A, IP00, IP21, IP54	380-500V	50-60Hz	310A	251A
0386-5 <sup>(1)</sup>	385A	MR9B, IP00, IP21, IP54	380-500V	50-60Hz	385A	310A
0385-5 <sup>(1)</sup>	385A	MR10, IP00	380-500V	50-60Hz	385A	310A
0460-5 <sup>(1)</sup>	460A	MR10, IP00	380-500V	50-60Hz	460A	385A
0520-5 <sup>(1)</sup>	520A	MR10, IP00	380-500V	50-60Hz	520A	460A
0590-5 <sup>(1)</sup>	590A	MR10, IP00	380-500V	50-60Hz	590A	520A
0651-5 <sup>(1)</sup>	650A	MR11, IP00	380-500V	50-60Hz	650A	590A
0731-5 <sup>(1)</sup>	730A	MR11, IP00	380-500V	50-60Hz	730A	650A
0650-5 <sup>(1)</sup>	650A	MR12, IP00	380-500V	50-60Hz	650A	590A
0730-5 <sup>(1)</sup>	730A	MR12, IP00	380-500V	50-60Hz	730A	650A
0820-5 <sup>(1)</sup>	820A	MR12, IP00	380-500V	50-60Hz	820A	730A
0920-5 <sup>(1)</sup>	920A	MR12, IP00	380-500V	50-60Hz	920A	820A
1040-5 <sup>(1)</sup>	1040A	MR12, IP00	380-500V	50-60Hz	1040A	920A
1180-5 <sup>(1)</sup>	1180A	MR12, IP00	380-500V	50-60Hz	1180A	920A
0004-6	3.9A	MR5, IP21, IP54	525-600V	50-60Hz	3.9A	2.7A
0006-6	6.1A	MR5, IP21, IP54	525-600V	50-60Hz	6.1A	3.9A
0009-6	9A	MR5, IP21, IP54	525-600V	50-60Hz	9A	6.1A
0011-6	11A	MR5, IP21, IP54	525-600V	50-60Hz	11A	9A
0018-6	18A	MR6, IP21, IP54	525-600V	50-60Hz	18A	13.5A
0022-6	22A	MR6, IP21, IP54	525-600V	50-60Hz	22A	18A
0027-6	27A	MR6, IP21, IP54	525-600V	50-60Hz	27A	22A
0034-6	34A	MR6, IP21, IP54	525-600V	50-60Hz	34A	27A
0041-6	41A	MR7, IP21, IP54	525-600V	50-60Hz	41A	34A
0052-6	52A	MR7, IP21, IP54	525-600V	50-60Hz	52A	41A
0062-6	62A	MR7, IP21, IP54	525-600V	50-60Hz	62A	52A
0080-6 <sup>(1)</sup>	80A	MR8, IP21, IP54	525-600V	50-60Hz	80A	62A
0100-6 <sup>(1)</sup>	100A	MR8, IP00, IP21, IP54	525-600V	50-60Hz	100A	80A

**RATINGS (continues)**

Type	Current rating 40°C continuous current I <sub>Lout</sub>	Frame size/enclosure protection class	Mains voltage	Frequency	Light Overload Current at 40°C	Heavy Overload Current at 50°C
0125-6 <sup>(1)</sup>	125A	MR8, IP00, IP21, IP54	525-600V	50-60Hz	125A	100A
0144-6 <sup>(1)</sup>	144A	MR9A, IP00, IP21, IP54	525-600V	50-60Hz	144A	125A
0208-6 <sup>(1)</sup>	208A	MR9A, IP00, IP21, IP54	525-600V	50-60Hz	208A	170A
0262-6 <sup>(1)</sup>	261A	MR9B, IP00	525-600V	50-60Hz	261A	208A
0261-6 <sup>(1)</sup>	261A	MR10, IP00	525-600V	50-60Hz	261A	208A
0325-6 <sup>(1)</sup>	325A	MR10, IP00	525-600V	50-60Hz	325A	261A
0385-6 <sup>(1)</sup>	385A	MR10, IP00	525-600V	50-60Hz	385A	325A
0416-6 <sup>(1)</sup>	416A	MR10, IP00	525-600V	50-60Hz	416A	385A
0461-6 <sup>(1)</sup>	460A	MR11, IP00	525-600V	50-60Hz	460A	416A
0521-6 <sup>(1)</sup>	520A	MR11, IP00	525-600V	50-60Hz	520A	460A
0460-6 <sup>(1)</sup>	460A	MR12, IP00	525-600V	50-60Hz	460A	416A
0520-6 <sup>(1)</sup>	520A	MR12, IP00	525-600V	50-60Hz	520A	460A
0590-6 <sup>(1)</sup>	590A	MR12, IP00	525-600V	50-60Hz	590A	520A
0650-6 <sup>(1)</sup>	650A	MR12, IP00	525-600V	50-60Hz	650A	590A
0750-6 <sup>(1)</sup>	750A	MR12, IP00	525-600V	50-60Hz	750A	650A
0820-6 <sup>(1)</sup>	820A	MR12, IP00	525-600V	50-60Hz	820A	650A
0007-7	7.5A	MR6, IP21, IP54	525-690V	50-60Hz	7.5A	5.5A
0010-7	10A	MR6, IP21, IP54	525-690V	50-60Hz	10A	7.5A
0013-7	13.5A	MR6, IP21, IP54	525-690V	50-60Hz	13.5A	10A
0018-7	18A	MR6, IP21, IP54	525-690V	50-60Hz	18A	13.5A
0022-7	22A	MR6, IP21, IP54	525-690V	50-60Hz	22A	18A
0027-7	27A	MR6, IP21, IP54	525-690V	50-60Hz	27A	22A
0034-7	34A	MR6, IP21, IP54	525-690V	50-60Hz	34A	27A
0041-7	41A	MR7, IP21, IP54	525-690V	50-60Hz	41A	34A
0052-7	52A	MR7, IP21, IP54	525-690V	50-60Hz	52A	41A
0062-7	62A	MR7, IP21, IP54	525-690V	50-60Hz	62A	52A
0080-7 <sup>(1)</sup>	80A	MR8, IP00, IP21, IP54	525-690V	50-60Hz	80A	62A
0100-7 <sup>(1)</sup>	100A	MR8, IP00, IP21, IP54	525-690V	50-60Hz	100A	80A
0125-7 <sup>(1)</sup>	125A	MR8, IP00, IP21, IP54	525-690V	50-60Hz	125A	100A
0144-7 <sup>(1)</sup>	144A	MR9A, IP00, IP21, IP54	525-690V	50-60Hz	144A	125A
0170-7 <sup>(1)</sup>	170A	MR9A, IP00, IP21, IP54	525-690V	50-60Hz	170A	144A
0208-7 <sup>(1)</sup>	208A	MR9A, IP00, IP21, IP54	525-690V	50-60Hz	208A	170A
0261-7 <sup>(1)</sup>	261A	MR10, IP00	525-690V	50-60Hz	261A	208A

### RATINGS (continues)

Type	Current rating 40°C continuous current $I_{Lout}$	Frame size/enclosure protection class	Mains voltage	Frequency	Light Overload Current at 40°C	Heavy Overload Current at 50°C
0262-7 <sup>(1)</sup>	261A	MR9B, IP00, IP21, IP54	525-690V	50-60Hz	261A	208A
0325-7 <sup>(1)</sup>	325A	MR10, IP00	525-690V	50-60Hz	325A	261A
0385-7 <sup>(1)</sup>	385A	MR10, IP00	525-690V	50-60Hz	385A	325A
0416-7 <sup>(1)</sup>	416A	MR10, IP00	525-690V	50-60Hz	416A	385A
0460-7 <sup>(1)</sup>	460A	MR10, IP00	525-690V	50-60Hz	460A	416A
0461-7 <sup>(1)</sup>	460A	MR11, IP00	525-690V	50-60Hz	460A	416A
0521-7 <sup>(1)</sup>	520A	MR11, IP00	525-690V	50-60Hz	520A	460A
0520-7 <sup>(1)</sup>	520A	MR12, IP00	525-690V	50-60Hz	520A	460A
0590-7 <sup>(1)</sup>	590A	MR12, IP00	525-690V	50-60Hz	590A	520A
0650-7 <sup>(1)</sup>	650A	MR12, IP00	525-690V	50-60Hz	650A	590A
0750-7 <sup>(1)</sup>	750A	MR12, IP00	525-690V	50-60Hz	750A	650A
0820-7 <sup>(1)</sup>	820A	MR12, IP00	525-690V	50-60Hz	820A	650A

Vacon 100 series (market with) <sup>(1)</sup> = -ED (enclosed drives IP21, IP54)

### Vacon 100X series

Type	Current rating 40°C continuous current $I_n$ <sup>(4)</sup>	Frame size/ enclosure protection class	Mains voltage	Frequency	Light Overload Current at 40°C <sup>(2)</sup>	Heavy Overload Current at 40°C <sup>(3)</sup>
0007-2-X	6.6A	MM4, IP66	208-240V	50/60Hz	9.9A	13,2A
0008-2-X	8A	MM4, IP66	208-240V	50/60Hz	12A	16A
0011-2-X	11A	MM4, IP66	208-240V	50/60Hz	16.5A	22A
0012-2-X	12.5A	MM4, IP66	208-240V	50/60Hz	18.8A	25A
0018-2-X	18A	MM5, IP66	208-240V	50/60Hz	27A	36A
0024-2-X	24.2A	MM5, IP66	208-240V	50/60Hz	36.3A	48,4A
0031-2-X	31A	MM5, IP66	208-240V	50/60Hz	46.5A	62A
0048-2-X	48A	MM6, IP66	208-240V	50/60Hz	72A	96A
0062-2-X	62A	MM6, IP66	208-240V	50/60Hz	93A	124A
0003-4-X	3.4A	MM4, IP66	380-480V	50/60Hz	5.1A	6,8A
0004-4-X	4.8A	MM4, IP66	380-480V	50/60Hz	7.2A	9,6A
0005-4-X	5.6A	MM4, IP66	380-480V	50/60Hz	8.4A	11,2A
0008-4-X	8A	MM4, IP66	380-480V	50/60Hz	12A	16A

## RATINGS (continues)

### Vacon 100X series

Type	Current rating 40°C continuous current I <sub>n</sub> <sup>(4)</sup>	Frame size/ enclosure protection class	Mains voltage	Frequency	Light Overload Current at 40°C <sup>(2)</sup>	Heavy Overload Current at 40°C <sup>(3)</sup>
0009-4-X	9.6A	MM4, IP66	380-480V	50/60Hz	14.4A	19,2A
0012-4-X	12A	MM4, IP66	380-480V	50/60Hz	18A	24A
0016-4-X	16A	MM5, IP66	380-480V	50/60Hz	24A	32A
0023-4-X	23A	MM5, IP66	380-480V	50/60Hz	34.5A	46A
0031-4-X	31A	MM5, IP66	380-480V	50/60Hz	46.5A	62A
0038-4-X	38A	MM6, IP66	380-480V	50/60Hz	57A	76A
0046-4-X	46A	MM6, IP66	380-480V	50/60Hz	69A	92A
0061-4-X	61A	MM6, IP66	380-480V	50/60Hz	91.5A	122A
0072-4-X	72A	MM6, IP66	380-480V	50/60Hz	80A	108A
0003-5-X	3.4A	MM4, IP66	380-500V	50/60Hz	5.1A	6,8A
0004-5-X	4.8A	MM4, IP66	380-500V	50/60Hz	7.2A	9,6A
0005-5-X	5.6A	MM4, IP66	380-500V	50/60Hz	8.4A	11,2A
0008-5-X	8A	MM4, IP66	380-500V	50/60Hz	12A	16A
0009-5-X	9.6A	MM4, IP66	380-500V	50/60Hz	14.4A	19,2A
0012-5-X	12A	MM4, IP66	380-500V	50/60Hz	18A	24A
0016-5-X	16A	MM5, IP66	380-500V	50/60Hz	24A	32A
0023-5-X	23A	MM5, IP66	380-500V	50/60Hz	34.5A	46A
0031-5-X	31A	MM5, IP66	380-500V	50/60Hz	46.5A	62A
0038-5-X	38A	MM6, IP66	380-500V	50/60Hz	57A	76A
0046-5-X	46A	MM6, IP66	380-500V	50/60Hz	69A	92A
0061-5-X	61A	MM6, IP66	380-500V	50/60Hz	91.5A	122A
0072-5-X	72A	MM6, IP66	380-500V	50/60Hz	80A	108A

## LIMITATIONS

### Vacon 100X series:

<sup>(2)</sup> = for 1 minute every 10 minutes maximum

<sup>(3)</sup> = for 2 s every 20 s maximum

<sup>(4)</sup> = for ambient temperature of 50°C the output current must be derated to 75% of I<sub>n</sub>

## PLACE OF PRODUCTION

Vacon Plc  
 Runsorintie 7  
 65380 Vaasa  
 Finland

Vacon S.R.L.  
 Via Roma 2  
 39014 Postal  
 Italy