

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Frequency Converter**with type designation(s)
Vacon 100X series,

Issued to

Vacon Ltd
VAASA, Finlandis found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Products approved by this certificate iare accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2026-03-14**.Issued at **Høvik** on **2021-02-16**DNV GL local station: **Finland CMC**Approval Engineer: **Nicolay Horn**for **DNV GL**

Marta Alonso Pontes
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id: **262.1-020692-7**
 Certificate No: **TAE00000Y0**
 Revision No: **2**

Name and place of manufacturer

Vacon Ltd
 Runsorintie 7, VAASA
 Finland

Vacon S.r.l. –
 via Roma, 2 I-39014 POSTAL, Merano (BZ)
 Italy

Product description

Vacon 100X. Frequency converter for use in various marine applications.

Mains voltage 208-240V, 50/60Hz, 3~			
Frequency converter type	Current rating 40degC continuous current I _{Lout} (A)	Frame size	Enclosure Protection
0007-2-X	6,6	MM4	IP66
0008-2-X	8	MM4	IP66
0011-2-X	11	MM4	IP66
0012-2-X	12,5	MM4	IP66
0018-2-X	18	MM5	IP66
0024-2-X	24,2	MM5	IP66
0031-2-X	31	MM5	IP66
0048-2-X	48	MM6	IP66
0062-2-X	62	MM6	IP66

Mains voltage 380-480V, 50/60Hz, 3~			
Frequency converter type	Current rating 40degC continuous current I _{Lout} (A)	Frame size	Enclosure Protection
0003-4-X	3,4	MM4	IP66
0004-4-X	4,8	MM4	IP66
0005-4-X	5,6	MM4	IP66
0008-4-X	8	MM4	IP66
0009-4-X	9,6	MM4	IP66
0012-4-X	12	MM4	IP66
0016-4-X	16	MM5	IP66
0023-4-X	23	MM5	IP66
0031-4-X	31	MM5	IP66
0038-4-X	38	MM6	IP66
0046-4-X	46	MM6	IP66
0061-4-X	61	MM6	IP66
0072-4-X	72	MM6	IP66

Mains voltage 380-500V, 50/60Hz, 3~			
Frequency converter type	Current rating 40degC continuous current I _{Lout} (A)	Frame size	Enclosure Protection
0003-5-X	3,4	MM4	IP66
0004-5-X	4,8	MM4	IP66
0005-5-X	5,6	MM4	IP66
0008-5-X	8	MM4	IP66
0009-5-X	9,6	MM4	IP66
0012-5-X	12	MM4	IP66
0016-5-X	16	MM5	IP66

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Mains voltage 380-500V, 50/60Hz, 3~			
Frequency converter type	Current rating 40degC continuous current I _{Lout} (A)	Frame size	Enclosure Protection
0023-5-X	23	MM5	IP66
0031-5-X	31	MM5	IP66
0038-5-X	38	MM6	IP66
0046-5-X	46	MM6	IP66
0061-5-X	61	MM6	IP66
0072-5-X	72	MM6	IP66

Application/Limitation

Supply voltage range: 208-240V / 380-480V / 380 -500V, 50/60 Hz
Voltage variation: - 15 %, +10 % continuously
Frequency variation: 47.5 – 66 Hz
Output frequency: 0 – 320 Hz
Temperature range in operation: 0 – 40 °C (40 – 60 °C when derated 2,5%/°C)
Temperature class: A
Vibration class: A
Humidity class: A
EMC class: DNVGL-CG-0339
To be used on EMC class A locations

Product certificate

Frequency converters rated equal or larger than 100kW serving essential or important functions as defined in DNV GL rules Pt.4 Ch.8 shall have a product certificate according to DNV GL Pt.4 Ch.8 Sec.1 Table 3 for each delivery to DNV GL classed vessels.

For product certification, the following documents shall be submitted for approval:

- Reference to this Type Approval Certificate
- Functional description for the intended use, configuration and interface (e.g. alarms, monitoring and auxiliary power supplies)
- Test program for routine tests and functional tests
- Single line diagram (only applicable for multi drive configuration)
- If additional components apart from the type approved frequency converter are part of the delivery, documentation in accordance with DNVGL rules Pt.4 Ch.8 Sec.1 table 2 shall be delivered for the additional components

The Type Approval covers hardware and software for the basic controller.

Clause for software control:

All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval. Major changes in the software are to be approved before being installed in the converter.

Type Approval documentation

Technical info:

“VACON 100X & VACON 20X, Decentralizes AC Drives”, Brochure from Vacon, “Vacon 100X series voltage and current ratings”, XL sheet from Vacon.

Test reports:

TÜV SÜD Technical Report No. 028-71395934-000 Rev.00 issued 2011-12-14.
TÜV SÜD Technical Report No. 71395257 issued 2011-10-12.

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TÜV SÜD Compliance Document No. D8 12 02 76674 006 issued 2012-02-27.
VTT Test Report no VTT-S-02611-15 issued 2015-06-17.

Tests carried out

Visual inspection, Performance, Power supply failure, Power supply variations, Voltage/frequency variation, Vibration/shock, Dry heat, Damp heat, Insulation resistance, High voltage.
EMC: Electrical fast transient (Burst), electrical slow transient (Surge), RF-common mode Voltage, radiated RF-electromagnetic fields, electric discharge (ESD), radiated and conducted emission.

Marking of product

Vacon 100X - Type designation – Power – Voltage

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.
The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Assessment to be performed at 2 and 3.5 year and at renewal.

END OF CERTIFICATE