DNV·GL

Certificate No:
TAE00000Y0

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Frequency Converter

with type designation(s)
Vacon 100X series,

Issued to
Vacon Ltd
VAASA, Finland

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

Frequency Converter for Asyncronous Motors Range: 1,1 kW to 37 kW
208-240 / 380-480 / 380-500 V AC supply.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2021-03-14**.

Issued at **Høvik** on **2016-03-15**

for **DNV GL**

DNV GL local station: **Turku**

Approval Engineer: **Nicolay Horn**

Marit Laumann
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.

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Job Id: **262.1-020692-1**
Certificate No: **TAE00000Y0**

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
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*:	DNV Standard No 2.4 / IEC 61800-3 C2 To be used on EMC class A locations

Documents for the actual application are to be submitted for approval in each case in accordance with DNVGL Rules Pt.4, Ch.8, Sec.1 Table 2. A Product Certificate is required for converters ≥ 100 kW.

* Converters EMC classed C2 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.

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

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 is 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 Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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 least every second year.

END OF CERTIFICATE