DNV·GL

Certificate No:
E-14028
File No:
822.21
Job Id:
262.1-010767-3

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Frequency Converter

with type designation(s)
NXL

Issued to
Vacon Oyj
VAASA, Finland

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application :

Frequency Converter for Asyncronous Motors NXL series. Range: 0,37 kW to 30 kW 208 - 500 VAC supply.

This Certificate is valid until **2018-12-31**.
Issued at **Høvik** on **2015-03-15**

DNV GL local station: **Turku**

Approval Engineer: **Nicolay Horn**

for **DNV GL**
Digitally Signed By: Sjåvåg, Trond
Location: DNV GL Høvik, Norway
Signing Date: 2015-03-16, on behalf of

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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Name and place of manufacturer

Vacon Oyj
VAASA, Finland

Vacon China Drives Co. Ltd
No.71 Xinqing Road, 215123 Suzhou, China

Product description

Variable speed controller for asynchronous motor. Constant / variable torque applications.
Air cooled only.

Type designation	Frame size	Mains supply (V)	Number of phases	Motor shaft power (kW) [1)]
NXL0002	MF2	208 – 240	3	0,37
NXL0003	MF3	208 – 240	3	0,75
NXL0004	MF3	208 – 240	3	1,1
NXL0006	MF3	208 – 240	3	1,5
NXL0001	MF2	380 – 500	3	0,55
NXL0002	MF2	380 – 500	3	0,75
NXL0003	MF3	380 – 500	3	1,1
NXL0004	MF3	380 – 500	3	1,5
NXL0005	MF3	380 – 500	3	2,2
NXL0003	MF4	380 – 500	3	1,1
NXL0004	MF4	380 – 500	3	1,5
NXL0005	MF4	380 – 500	3	2,2
NXL0007	MF4	380 – 500	3	3
NXL0009	MF4	380 – 500	3	4
NXL0012	MF4	380 – 500	3	5,5
NXL0016	MF5	380 – 500	3	7,5
NXL0023	MF5	380 – 500	3	11
NXL0031	MF5	380 – 500	3	15
NXL0038	MF6	380 – 500	3	18,5
NXL0045	MF6	380 – 500	3	22
NXL0061	MF6	380 – 500	3	30

1) Values applicable for 40 °C, 10 % overload and 230 V / 380 V. To be modified for ships application at 45 °C. See under "Application / limitation".

NXL units can be equipped with the following options: SIN Filters, RFI Filters & Brake Resistors. For details see Vacon documentation.

Application/Limitation

Supply voltage range:	208 - 500 V, 50/60 Hz
Voltage variation:	- 10 % , + 10 %
Frequency variation:	± 10 %
Output frequency:	0 - 320 Hz
Temperature range in operation:	0 - 40 °C (40 - 50 °C when derated 1,5% /°C, 50 - 55 when derated 2,5% /°C)
Temperature class:	A
Vibration class:	A
Humidity class:	A
Protection class:	IP20, IP21 & IP54

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EMC class*: DNV CN 2,4 / IEC 61800-3
To be used on EMC class A locations

The NXL must be regarded as a component. The actual installation shall be designed according to Vacon Installation & Operating Instructions and according to the applicable DNV Rules for the actual application.Documents for the actual application are to be submitted for approval in each case in accordance with DNV Rules Pt.4, Ch.8, Sec.1 Table B2. A Product Certificate is required for converters ≥ 100 kW

To be installed in an enclosure with an IP degree in accordance with DNV Rules w.r.t. location.

*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.

For marine applications size of drive to be derated with respect to an ambient temperature of 40°C (1,5% per deg. C for ambient above 40 - 50 °C) or choosen acc. to 50 °C rating. See manual.

Type Approval documentation

Technical info:
"Modifications to DNV Type Approval Certificates", email from Vacon to DNV dated 2010-10-13.
"Vacon NXL User's manual document code ud00791M dated 2006-03-22 (parts).

Test reports:
"Classification documentation of frequency converters – Air cooled Fr4-14, Liq. Cooled Ch3-7, dated 2006.

Tests carried out

Visual inspection, Performance/heat run, Power supply failure, Power supply variations, Voltage/frequency variation, Vibration, Dry heat, Damp heat, Insulation resistance, High voltage.
EMC: The following tests are in accordance with the DNV CN2.4/ IEC 61800-3: Electrical fast transient (Burst), electrical slow transient (Surge), RF-common mode Voltage, radiated RF-electromagnetic fields, electric discharge (ESD), radiated and conducted emission. (See under application limitation).

Marking of product

Vacon NXL – 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 survey 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.

Survey to be performed at least every second year.

END OF CERTIFICATE