DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. E-10592
This Certificate consists of 4 pages

This is to certify that the

Frequency Converter

with type designation(s)

NXL

Manufactured by

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.

Place and date
Høvik, 2010-12-29
for DET NORSKE VERITAS AS

This Certificate is valid until
2014-12-31

Marit Laumann	*Local Office*	Nicolay Horn
Head of Section	DNV Vaasa	*Surveyor*

Notice: 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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million.In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

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:	- 15 % , + 10 %
Frequency variation:	± 10 %
Output frequency:	0 - 320 Hz (7200Hz special software)
Temperature range in operation:	0 - 40 °C (40 - 70 °C when derated 2,5%/°C)
Protection class:	IP20, IP21 & IP54
Temperature class:	A
Vibration class:	A
Humidity class:	A
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 Users Manual and according to the applicable DNV Rules for the actual application. Drawings for the actual application are to be submitted for approval in each case. To be installed in an enclosure with an IP degree in accordance with DNV Rules w.r.t. location.

*Converters with conducted and radiated emission above the DNV required limits can be installed in "special distribution zone" and "general power distribution zone", in accordance with IEC 60533 provided measures are taken to attenuate these effects on the distribution system, so the safe operation is assured. Planned EMC measures shall be submitted for approval prior to installation onboard.

GN
The EMC measures should be derived from an EMC analysis and plan in accordance with IEC 60533 Annex B and /or IEC 61800-3 Annex E.
End of GN.

For marine applications size of drive to be derated with respect to an ambient temperature of 40°C (2,5% per deg. C for ambient above 40°C) or choosen acc. to 50°C rating. See manual.

Type Approval documentation

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

Certificate retention survey

The scope of the retention/renewal survey 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