

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Frequency Converter**with type designation(s)
SVX

Issued to

**Eaton Industries GmbH
Bonn, Nordrhein-Westfalen, Germany**is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Frequency Converter for Asynchronous Motors SVX series. Range: 0,55 kW to 200 kW 208
- 690 VAC supply.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.**Issued at **Hamburg** on **2018-08-13**for **DNV GL**This Certificate is valid until **2023-08-12**.DNV GL local station: **Vaasa**Approval Engineer: **Thomas Hartmann**

**Arne Schaarmann
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.



Name and place of manufacturer

Customer ID :111287

Product description

Variable speed controller for asynchronous motor. Constant / variable torque applications.
 Air cooled. FRxx = air cooled.

Type designation	Frame size	Mains supply (V)	Number of phases	Motor shaft power (kW) ¹⁾
SVXF07A-	FR4	208 - 240	3	0,55
SVX001A-	FR4	208 - 240	3	0,75
SVXF15A-	FR4	208 - 240	3	1,1
SVX002A-	FR4	208 - 240	3	1,5
SVX003A-	FR4	208 - 240	3	2,2
SVX004A-	FR5	208 - 240	3	3
SVX005A-	FR5	208 - 240	3	4
SVX007A-	FR5	208 - 240	3	5,5
SVX010A-	FR6	208 - 240	3	7,5
SVX015A-	FR6	208 - 240	3	11
SVX020A-	FR7	208 - 240	3	15
SVX025A-	FR7	208 - 240	3	18,5
SVX030A-	FR7	208 - 240	3	22
SVX040A-	FR8	208 - 240	3	30
SVX050A-	FR8	208 - 240	3	37
SVX060A-	FR8	208 - 240	3	45
SVX075A-	FR9	208 - 240	3	55
SVX100A-	FR9	208 - 240	3	75
SVX001A-	FR4	380 - 500	3	1,1
SVXF15A-	FR4	380 - 500	3	1,5
SVX002A-	FR4	380 - 500	3	2,2
SVX003A-	FR4	380 - 500	3	3
SVX005A-	FR4	380 - 500	3	4
SVX006A-	FR4	380 - 500	3	5,5
SVX007A-	FR5	380 - 500	3	7,5
SVX010A-	FR5	380 - 500	3	11
SVX015A-	FR5	380 - 500	3	15
SVX020A-	FR6	380 - 500	3	18,5
SVX025A-	FR6	380 - 500	3	22
SVX030A-	FR6	380 - 500	3	30
SVX040A-	FR7	380 - 500	3	37
SVX050A-	FR7	380 - 500	3	45
SVX060A-	FR7	380 - 500	3	55
SVX075A-	FR8	380 - 500	3	75
SVX100A-	FR8	380 - 500	3	90
SVX125A-	FR8	380 - 500	3	110
SVX150A-	FR9	380 - 500	3	132

Type designation	Frame size	Mains supply (V)	Number of phases	Motor shaft power (kW) ¹⁾
SVX200A-	FR9	380 - 500	3	160
SVX002A-	FR6	525 - 690	3	3
SVX003A-	FR6	525 - 690	3	4
SVX004A-	FR6	525 - 690	3	5,5
SVX005A-	FR6	525 - 690	3	7,5
SVX007A-	FR6	525 - 690	3	11
SVX010A-	FR6	525 - 690	3	15
SVX015A-	FR6	525 - 690	3	18,5
SVX020A-	FR6	525 - 690	3	22
SVX025A-	FR6	525 - 690	3	30
SVX030A-	FR7	525 - 690	3	37,5
SVX040A-	FR7	525 - 690	3	45
SVX050A-	FR8	525 - 690	3	55
SVX060A-	FR8	525 - 690	3	75
SVX075A-	FR8	525 - 690	3	90
SVX100A-	FR9	525 - 690	3	110
SVX125A-	FR9	525 - 690	3	132
SVX150A-	FR9	525 - 690	3	160
SVX175A-	FR9	525 - 690	3	200

1) Values applicable for 40 °C, 10 % overload and highest voltage in each voltage class. To be modified for ships application at 45 °C. See under "Application / limitation".

SVX units can be equipped with following options: SIN Filters, DUT Filters, RFI Filters and Brake Resistor. (For details see Eaton documentation.)

Application/Limitation

Supply voltage range:	208 - 690 V, 50/60 Hz
Voltage variation:	± 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:	IP00, IP21 & IP54
EMC class*:	DNV CN 2,4 / IEC 61800-3 To be used on EMC class A locations

The SVX must be regarded as a component. The actual installation shall be designed according to Eaton Users Manual and according to the applicable DNV GL Rules for the actual application. Documents for the actual application are to be submitted for approval in each case in accordance with DNV GL Rules Pt.4, Ch.8, Sec.1 Table 2. A Product Certificate is required for converters ≥ 100 kW.

To be installed in an enclosure with an IP degree in accordance with DNV GL 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

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assured. Planned EMC measures shall be submitted for approval prior to installation onboard. 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.

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 chosen acc. to 50 °C rating. See manual.

Type Approval documentation

Technical info:

"Vacon request for update" Part of email from Vacon to DNV dated 2010-09-23.

"Eaton User's manual SVX-SPX dated May 2011.

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

Eaton SVX – 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 Routines (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