



# DET NORSKE VERITAS TYPE APPROVAL CERTIFICATE

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**CERTIFICATE NO. E-10507**

This Certificate consists of 5 pages

*This is to certify that the*

**Frequency Converter**

822.21

*with type designation(s)*

**Altivar 312**

*Holder of certificate*

**Schneider Toshiba Inverter**

**PACY SUR EURE, France**

*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 Asynchronous Motors Altivar 312 series. Range: 0,18 kW to 15 kW 200 - 500 VAC supply.

*Place and date*  
Høvik, 2010-10-20  
*for Det Norske Veritas AS*

*This Certificate is valid until*  
2014-06-30

Marit Laumann  
*Head of Section*

*Local Office*  
Le Havre

Nicolay Horn  
*Surveyor*

**Name and place of manufacturer**

P.T. Schneider Electric Manufacturing Batam

Batamindo Industrial Park

BLK 208, Muka kuning

Batam Island - Indonesia

**Product description**

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

Single phase supply with integrated EMC filter

Type designation	Mains supply (V)	Number of phases	Motor power output (kW) <sup>1)</sup>
ATV 312H018M2	200 - 240	1	0,18
ATV 312H037M2	200 - 240	1	0,37
ATV 312H055M2	200 - 240	1	0,55
ATV 312H075M2	200 - 240	1	0,75
ATV 312HU11M2	200 - 240	1	1,1
ATV 312HU15M2	200 - 240	1	1,5
ATV 312HU22M2	200 - 240	1	2,2

3-phase supply without EMC filter \*

Type designation	Mains supply (V)	Number of phases	Motor power output (kW) <sup>1)</sup>
ATV 312H018M3	200 - 240	3	0,18
ATV 312H037M3	200 - 240	3	0,37
ATV 312H055M3	200 - 240	3	0,55
ATV 312H075M3	200 - 240	3	0,75
ATV 312HU11M3	200 - 240	3	1,1
ATV 312HU15M3	200 - 240	3	1,5
ATV 312HU22M3	200 - 240	3	2,2
ATV 312HU30M3	200 - 240	3	3,0
ATV 312HU40M3	200 - 240	3	4,0
ATV 312HU55M3	200 - 240	3	5,5
ATV 312HU75M3	200 - 240	3	7,5
ATV 312HD11M3	200 - 240	3	11
ATV 312HD15M3	200 - 240	3	15

\* Optional EMC filter. Required to meet DNV requirements, see application /limitation.

3-phase phase supply with integrated EMC filter

Type designation	Mains supply (V)	Number of phases	Motor power output (kW) <sup>1)</sup>
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ATV 312H037N4	380 - 500	3	0,37
ATV 312H055N4	380 - 500	3	0,55
ATV 312H075N4	380 - 500	3	0,75
ATV 312HU11N4	380 - 500	3	1,1
ATV 312HU15N4	380 - 500	3	1,5
ATV 312HU22N4	380 - 500	3	2,2
ATV 312HU30N4	380 - 500	3	3,0
ATV 312HU40N4	380 - 500	3	4,0
ATV 312HU55N4	380 - 500	3	5,5
ATV 312HU75N4	380 - 500	3	7,5
ATV 312HD11N4	380 - 500	3	11
ATV 312HD15N4	380 - 500	3	15

1) Values applicable for 40 °C. To be modified for ships application at 45 °C. See under "Application / limitation".

### Application/Limitation

Supply voltage range: 200 - 500 V, 50/60 Hz

Voltage variation: ± 10 %

Frequency variation: ± 10 %

Output frequency: 0 - 500 Hz.

Temperature range in operation: 0 - 40 °C (40 - 60 °C when derated)

Temperature class: A

Vibration class: A

Humidity class: A

EMC class: A (with filter)

The Altivar 312 must be regarded as a component. The actual installation to be designed according to Schneider Users Manual and according to the applicable DNV Rules for the actual application. To be installed in an enclosure with an IP degree in accordance with DNV Rules w.r.t. location.

Use of RFI filter / marine adaption filter required to reduce the EMC noise below the DNV requirements. This filter can be omitted. Converters with conducted and radiated emission above the DNV required limits may 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.

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.

Use of mechanical adaptation required to reduce the Vibration level.

For IT installations, Earth Monitoring System compatibility, must be investigated prior to installation onboard

For marine applications size of drive to be chosen according to chapter "Technical Specification" and derated with respect to an ambient temperature of 45\_C and drive mode in accordance with chapter "Environment" in "Altivar 31 Users Manual" (2,2% per deg. C for ambient above 45\_C).

## **Type Approval documentation**

### **Tests carried out**

Visual inspection, Performance/temperature rise, 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 IEC 601800-3 and CN 2.4: Electrical fast transient (Burst), electrical slow transient (Surge), conducted disturbances, electric discharge (ESD), radiated and conducted emission.

### **Marking of product**

Altivar 312 - 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

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**Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.**

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.

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