DNV·GL

Certificate No:
TAE00002AD

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Motor

with type designation(s)
Series of 1LE1, 1PC1, 1MB1, 1PC3, 1LE5, 1PC5, 1CV, 1CN

Issued to
Siemens AG
Nürnberg, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

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

Degree of protection	**IP55, IP56, IP65, IP66**
Insulation class	**155 (F), 180 (H)**
Temp. class (°C)	**155 (F), 180 (H)**
Voltage (V)	**230 V up to 690 V**
Power (kW)	**0,03 kW up to 630 kW**
Frequency (Hz)	**50 Hz, 60 Hz**
Speed (RPM)	**750 1/min up to 3600 1 / min**

Issued at **Hamburg** on **2017-09-26**
This Certificate is valid until **2022-09-25**.
DNV GL local station: **Augsburg**

for **DNV GL**

Approval Engineer: **Heinz-Dieter Hespe**

Duy Nam Le
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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Job Id: **262.1-024334-1**
Certificate No: **TAE00002AD**

Product description

AC Induction Motors

Places of manufacturing
Siemens AG, PD LD, Siemensstr. 15, 97616 Bad Neustadt / Saale, Germany
Siemens s.r.o., Nadrazni 25, 789 85 Mohelnice, Czech Republic
Siemens s.r.o., Markova 952, 744 01 Frenstat, Czech Republic

Types:

1LE10.. Aluminium motor, self-ventilated or separate-ventilated
1PC10.. Aluminium motor, non-ventilated (without fan)

1LE15.. Cast iron motor, self-ventilated or separate-ventilated
1LE5... Cast iron motor, self-ventilated or separate-ventilated
1CV... Cast iron motor, self-ventilated or separate-ventilated

1PC15.. Cast iron motor, non-ventilated (without fan)
1PC5... Cast iron motor, non-ventilated (without fan)
1CN... Cast iron motor, non-ventilated (without fan)

1LE16.. Cast iron motor, self-ventilated or separate-ventilated, special purpose
1PC16.. Cast iron motor, non-ventilated (without fan), special purpose

1PC3... Motor with customer-specific design

1MB1... Explosion proof motors

1MB101.1A to 1MB101.1D PTB 12 ATEX 3018
II 2 D Ex tb IIIC T120°C Db IP65 or II 2 D Ex tb IIIC T140°C Db IP65

1MB102.1A to 1MB102.1D PTB 12 ATEX 3016
II 3 D Ex tc IIIB T120°C Dc IP55 or II 3 D Ex tc IIIB T140°C Dc IP55

1MB103.1A to 1MB103.1D PTB 12 ATEX 3016
II 3 D Ex tc IIIB T120°C Dc IP55 or II 3 D Ex tc IIIB T140°C Dc IP55

Series of **1LE1, 1PC1, 1MB1, 1PC3, 1LE5, 1PC5, 1CV, 1CN** (type designation)	**Technical Data**
Size	63, 71, 80, 90, 100, 112, 132, 160, 180, 200, 225, 250, 280, 315, 355
Rated Power	S1, 0,03 up to 630 kW
Rated Voltage	220 V up to 690 V
Rated Frequency	50 Hz, 60 Hz Converter operation <=690V
No. of poles	2, 4, 6, 8 and pole changing types
Ambient Temperature	+45 °C, + 50°C, -50 °C with special measures
Thermal Class	155 (F), 180 (H)
Degree of Protection	IP55, IP56, IP65, IP66
Standard	IEC 60034-1 / 2010-02

The motors are intended for installaton below deck, in case of IP56 or higher application on deck and optional with built-in units e.g. brakes, external fans, encoders according to Siemens catalogue D81.1-2013

Application/Limitation

This Type Approval Certificate does not replace the requirement to DNV GL Product Certificate

Type Approval documentation

Order code definitions 1LE1 / 1PC1 / 1MB1 / 1PC3 dated 06.05.2013
Datasheet 1LE1501-2AD53, vers. 2013_10
Drawing 10_516283d15000002_Mot-kpl dated 2013-06-06
Inspection and test plan–Cold endurance test for lower ambient temperature 669RMRS01/10.07.2017
Overview 1CV_1CN-1LE5_1PC5_FS315_355a dated 15.12.2016

Tests carried out

according to IEC 60034-1:2010-02, IEC 92-301-3rd ed. 1980 + Amd 1-1994 + Amd 2-1995
GL Test Requirements for Electrical Machinery (VI-7-6), edition 1999

Test reports:
1LE16.. : T14100L-062-2 dated 04.02.2014
1MB10..: T14160L-063-6 dated 04.02.2014
1LE15.. : T14200L-064-8 dated 04.02.2014
1LE16.. : 3228404/1 dated 06.02.2014
1LE15.. : 3228404/2 dated 06.02.2014
1PC30.. : R&D33-02360i dated 13.02.2014
1LE10.. : R&D33-02361i dated 12.02.2014
1LE10.. : R&D33-02362i dated 12.02.2014
1PC15.. : R&D33-02363i dated 12.02.2014
1LE10.. : R&D33-02364i dated 12.02.2014
1CV43..: Test No.: 31592-B dated 28.2.2017

Marking of product

According to IEC 60034-1, clause 10.2

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type approval are 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.

Periodical assessment is to be performed after 2 years and after 3.5 years.
A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE