




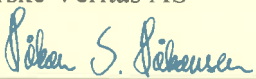
DET NORSKE VERITAS

EC-TYPE EXAMINATION CERTIFICATE

- [2] **EQUIPMENT OR PROTECTIVE SYSTEM INTENDED FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES DIRECTIVE 94/9/EC**
- [3] EC-Type Examination Certificate Number: **DNV 12 ATEX 11440X**
- [4] Equipment or Protective System: **Ex d motors**
- [5] Applicant – Manufacturer or Authorized representative: **HIGEN MOTOR CO., LTD.**
- [6] Address: **74-5, SEONGSAN-DONG, CHANGWON-SI
KOREA**
- [7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- [8] DNV, notified body number 0575 in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
- The examination and test results are recorded in confidential reports listed in section 14.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0: 2009 and EN 60079-1: 2007
- [10] If the sign “X” is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- [11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protected system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system.
- [12] The marking of the equipment or protective system shall include the following:

 **II 2 G Ex d IIC/IIB T5/T6 Gb -20°C ≤ Ta ≤ +50°C**

Høvik, 2012-05-21
for Det Norske Veritas AS


for Marianne Spæren
Certification Manager



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

The digitally signed and electronically distributed document is the original and valid certificate. Ref.: www.dnv.com/digitalsignatures

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 300,000. 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.





[13] **Schedule**

[14] **EC-TYPE EXAMINATION CERTIFICATE No.:** DNV 12 ATEX 11440X

Certificate History

| Revision | Description | Report no. | Issue date |
|----------|----------------------|------------|------------|
| - | Original certificate | 2012-9242 | 2012-05-21 |

[15] **Description of Equipment or Protective System**

Three-phase one speed ac squirrel cage induction motor intended to be used with a variable speed drive. The temperature limitation is based on the torque limiting capacity of the drive and temperature sensing elements in the windings. Cooling is an external blower. The windings are of class F insulation.

Duty Types: TEFC(S1 and S3~S6) , TENV(S2 30min.), TEAO(S1)

TEFC: External fan is attached to the shaft end for the circulation of air around the enclosure.

TENV: Cooling without using a fan. (Duty Type: S2 30min.)

TEAO: Cooling air is blown over the totally enclosed motor surface by a separately fan.

Motors without fan can deliver same output power provided installation is according to IC418.

(Direct driven fan motors without cooling fan on the motor.)

The 2 pole to 8 poles protection types and motors rating

| Type Identification | Ex code | IP | Operation mode and T classification | Electrical Data | Rpm |
|---------------------|----------|----|-------------------------------------|----------------------------|------------|
| DB3D 80M | Ex d IIB | 56 | (S1 – S9)T5 or (S1 - S2)T6 | 200-690V 50/60Hz 0,3-1,1kW | 750 - 3600 |
| DC3D 80M | Ex d IIC | 66 | (S1 – S9)T5 or (S1 - S2)T6 | 200-690V 50/60Hz 0,3-1,1kW | 750 - 3600 |

Nomenclature

| | | | | | | | | | | | |
|---|---|---|---|----|---|----|-----|----|-----|---|----|
| D | C | 3 | D | 80 | M | 04 | B30 | FC | 380 | / | 60 |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | | ⑪ |

1st; D: Flameproof

2nd; B:IIB, C:IIC

3rd; three phase 1 speed

4th; terminal box protection type, D:Ex d

5th; frame number

6th; core length

7th; number of poles, 02: 2poles, 04: 4poles, 06: 6poles, 08:8poles

8th; mounting, B3, B5, B35, V1, V3, V5, V6

9th; ventilation, FC:TEFC, NV:TENV, AO:TEAO

10th; voltage & frequency

[16] **Project No.:** PRJC-224371-2010-PRC-KOR

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 300 000. 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.





EC-TYPE EXAMINATION CERTIFICATE No.: DNV 12 ATEX 11440X

Descriptive Documents

| Number | Title | Rev. | Date |
|------------|------------------------|------|------------|
| 4682EHCD01 | Motor Assembly 80M IIB | 0 | 2011.08.22 |
| 4682EHCD02 | Motor Assembly 80M IIC | 0 | 2011.08.22 |
| 2242ED0001 | Parts list 80M IIB | 0 | 2011.08.22 |
| 2242ED0002 | Parts list 80M IIC | 0 | 2011.08.22 |
| 3844EZ0015 | Labeling 80M IIB | 0 | 2011.08.22 |
| 3844EZ0016 | Labeling 80M IIC | 0 | 2011.08.22 |
| 3210E2D001 | Frame 80M Horizontal | 0 | 2010.11.16 |
| 3210E2D002 | Frame 80M Vertical | 0 | 2010.11.16 |
| 4810E2D001 | Bracket 80M Front | 0 | 2010.12.31 |
| 4810E2D002 | Bracket 80M Rear | 0 | 2010.12.31 |
| 4810E2D003 | Bracket 80M Flange | 0 | 2010.12.31 |
| 4370E3D001 | Shaft | 0 | 2011.02.17 |
| 4830E3N001 | Bushing | 0 | 2010.12.01 |
| 3040E3J001 | Terminal Base | 0 | 2010.07.14 |
| 3550E3J001 | Terminal Cover | 0 | 2010.07.14 |
| 3M91010 | Fan 2Pole | 0 | 2003.06.04 |
| 5900KK3035 | Fan 4...6Pole | 0 | 2004.04.13 |
| 3550KK3873 | Fan Cover Horizontal | 0 | 2001.11.02 |
| 3550KK3874 | Fan Cover Vertical | 0 | 2004.11.11 |

Routine test

Each enclosure must be routine pressure tested with for 60 seconds according to clause 16 of EN/IEC 60079-1.

| ITEM | Overpressure kPa |
|-------------------|------------------|
| DB3D frame | 1 103 |
| DB3D terminal box | 1 028 |
| DC3D frame | 1 289 |
| DC3D terminal box | 1 214 |

[17] Special Conditions for Safe Use

Repairs of the flameproof joints must be made in compliance with the structural specifications provided by the manufacturer. Repairs must not be made on the basis of values specified in tables 1 and 2 of EN/IEC 60079-1.

The tensile strength of the fastener elements of each part of the flame proof casing must be at least equal to 1220N/mm².

[18] Essential Health and Safety Requirements

See part 9 of this certificate

END OF CERTIFICATE

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 300,000. 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.

