

[1]

# EU-TYPE EXAMINATION CERTIFICATE

[2] Product Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

[3] EU-Type Examination Certificate Number: **DNV 21 ATEX 10179X** **Issue 0**

[4] Product: **Ex d motors**

[5] Manufacturer: **HIGEN MOTOR CO., LTD.**

[6] Address: **57, Gongdan-ro 473-bun-gil, Seongsan-gu, Changwon-si, Gyeongnam, Korea**

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] DNV Product Assurance AS, notified body number 2460, in accordance with Article 17 and Article 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products 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 item 16.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with: **EN IEC 60079-0:2018 and EN 60079-1:2014**

Where additional criteria beyond those given here have been used, they are listed at item 18 in the Schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

[11] This EU-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

 **II 2 G Ex db IIB or IIC T5...T6 Gb**



Date of issue:  
2021-12-09



Asle Kaastad  
For DNV Product Assurance AS  
The Certificate has been digitally signed.  
See [www.dnv.com/digitalsignatures](http://www.dnv.com/digitalsignatures) for info

[13] **Schedule**

[14] **EU-Type Examination Certificate No:** DNV 21 ATEX 10179X Issue 0

[15] **Description of Product**

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 by 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 160M	Ex db IIB	56	(S1 – S9)T5 or (S1 - S2)T6	200-690V 50/60Hz 4,5 – 22,2kW	750 - 3600
DB3D 160L	Ex db IIB	56	(S1 – S9)T5 or (S1 - S2)T6	200-690V 50/60Hz 6,0 – 26,7kW	750 - 3600
DC3D 160M	Ex db IIC	66	(S1 – S9)T5 or (S1 - S2)T6	200-690V 50/60Hz 4,5 – 22,2kW	750 - 3600
DC3D 160L	Ex db IIC	66	(S1 – S9)T5 or (S1 - S2)T6	200-690V 50/60Hz 6,0 – 26,7kW	750 - 3600

**Nomenclature**

D	C	3	D	160	M	04	B30	FC	380	/	60
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩		⑩

1<sup>st</sup>; D: Flameproof

2<sup>nd</sup>; B:IIB, C:IIC

3<sup>rd</sup>; three phase 1 speed

4<sup>th</sup>; terminal box protection type, D:Ex d

5<sup>th</sup>; frame number

6<sup>th</sup>; core length

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

8<sup>th</sup>; mounting, B3, B5, B35, V1, V3, V5, V6

9<sup>th</sup>; ventilation, FC:TEFC, NV:TENV, AO:TEAO

10<sup>th</sup>; voltage & frequency

**Method of cooling [IEC 60034-6:1991, IC code]**

- Duty Types: TEFC(S1 and S3~S9) , TENV(S2 30min.) , TEAO(S1)
- TEFC (IC411) : External fan is attached to the shaft end for the circulation of air around the enclosure.
- TENV (IC410): Cooling without using a fan. (Duty Type : S2 30min.)
- TEAO (IC418): Cooling air is blown over the totally enclosed motor surface by an separately fan.  
Motors without fan can deliver not exceed output power provided installation is according to IC418.  
(Direct driven fan motors without cooling fan on the motor.)

**Ambient temperature:**

-20°C to +50°C

## Routine tests

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

ITEM	Overpressure kPa
DB3D frame	1 320
DB3D terminal box	1 360
DC3D frame	1 486
DC3D terminal box	1 548

[16] **Report No.:** 2021-9761 Rev. 0  
**Project No.:** PRJC-224371-2010-PRC-KOR

## [17] Specific Conditions of Use

1. 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 2 and 3 of EN/IEC 60079-1.
2. The tensile strength of the fastener elements of each part of the flame proof casing must be at least equal to 1220 N/mm<sup>2</sup>.
3. Type TEAO (IC418), cooling fans that are not mounted on the shaft of the motor to be cooled, shall not exceed the ratings of output power.
4. In case of use with a frequency converter, the motors may be equipped with internal temperature protection to ensure the insulation class. The surface temperature class may also be protected by embedded thermal sensors.
5. Ambient temperature between -20°C to +50°C is allowed without adding heating elements or other heating system.
6. The motors for IIB shall be installed so that the flanged joints(s) are not within 30 mm of a solid object that is not part of this equipment.
7. The motors for driven by converters must be supplied a second marking plate to ensure the temperature class. The relevant instructions for use variable frequency stated manufacturer shall be respected.

## [18] Essential Health and Safety Requirements

Met by compliance with the requirements mentioned in item 9.

## [19] Drawings and documents

Number	Title	Rev.	Date
4682EHCN01	Motor Assembly 160M/L IIB	2	2021.09.03
4682EHCN02	Motor Assembly 160M/L IIC	2	2021.09.03
2242EN0001	Parts list 160M/L IIB	0	2011.07.28
2242EN0002	Parts list 160M/L IIC	0	2011.07.28
3844EZ0003	Labelling 160M/L IIB	1	2021.09.03
3844EZ0004	Labelling 160M/L IIC	1	2021.09.03

Number	Title	Rev.	Date
3210E2N001	Frame 160M Horizontal	0	2010.12.30
3210E2N002	Frame 160L Horizontal	0	2010.12.30
3210E2N003	Frame 160M Vertical	0	2010.12.30
3210E2N004	Frame 160L Vertical	0	2010.12.30
4810E2N001	Bracket 160Fr. Front	0	2010.12.30
4810E2N002	Bracket 160Fr. Rear	0	2010.12.30
4810E2N003	Bracket 160Fr. Flange FF300	0	2010.12.30
4370E3N001	Shaft 160Fr. Horizontal	0	2010.12.03
4370E3N002	Shaft 160Fr. Horizontal	0	2011.07.28
4830E3N001	Bushing, Cable 80Fr.~180Fr.	0	2010.12.01
3040E3N001	Terminal Base 132Fr.~160Fr.	1	2011.09.09
3550E3N001	Terminal Cover 132Fr.~160Fr.	0	2010.10.18
5900KK3019	Fan 132Fr. 2P	0	1999.03.02
5900KK3021	Fan 132Fr.	0	1999.02.01
3M95653	Fan 160Fr.	0	1991.12.10
2M95110	Fan Cover 160Fr.	0	2008.03.27

[20] **Certificate History**

Issue	Description	Issue date	Report no.
0	This certificate replaces DNV 11 ATEX 05976X to update for EU Type-Examination Certificate in accordance with Directive 2014/34/EU, new version of harmonised standards and added the motors driven by converters.	2021-12-09	2021-9761

END OF CERTIFICATE