



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEx CNEX 19.0019X** Page 1 of 5 Certificate history:  
Status: **Current** Issue No: 3 [Issue 2 \(2020-07-07\)](#)  
Date of Issue: 2020-11-30 [Issue 1 \(2020-07-03\)](#)  
[Issue 0 \(2020-03-30\)](#)  
Applicant: **Svend Hoyer A/S**  
Over Hadstenvvej 42  
DK-8370 Hadsten  
Denmark  
Equipment: **Explosion proof three-phase induction motors Model HMCX-80-355**  
Optional accessory:  
Type of Protection: **db, eb, tb, tc**  
Marking: Ex db eb IIB/IIC T4 Gb  
Ex db IIB/IIC T4 Gb  
Ex tb IIIB/IIIC T130°C Db  
Ex tc IIIB/IIIC T130°C Dc

Approved for issue on behalf of the IECEx  
Certification Body:

**Hou Yandong**

Position:

**Certification Officer**

Signature:  
(for printed version)

Date:

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**6812AR, Arnhem**  
**Netherlands**





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Manufacturer: **Svend Hoyer A/S**  
Over Hadstenvvej 42  
DK-8370 Hadsten  
Denmark

Additional manufacturing locations: **Svend Hoyer Power Transmission Ningbo Co., LTD.**  
No. 19, JingWu Middle Road, Beilun District  
Ningbo Zhejiang 315821  
China

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

## STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

**IEC 60079-0:2017** Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

**IEC 60079-1:2014-06** Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

**IEC 60079-31:2013** Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

**IEC 60079-7:2015** Explosive atmospheres – Part 7: Equipment protection by increased safety "e"  
Edition:5.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

## TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[NL/CNEX/ExTR19.0019/00](#)  
[NL/CNEX/ExTR19.0019/03](#)

[NL/CNEX/ExTR19.0019/01](#)

[NL/CNEX/ExTR19.0019/02](#)

Quality Assessment Reports:

[IT/CES/QAR14.0004/04](#)

[NL/CNEX/QAR20.0004/00](#)



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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

Explosion proof three-phase induction motors model HMCX-80-355, with self-ventilated, squirrel-cage rotor and seated with ball bearings or roller bearings. The enclosure of the motor and terminal box is made in cast iron. The enclosure of the motor is constructed in type of protection flameproof enclosure 'db' for explosive gas atmospheres. The terminal box can be constructed in type of explosion protection 'db' or 'eb', for explosive gas atmospheres. The motor enclosure and terminal box can also be constructed in type of explosion protection 'tb/tc', for use in explosive dust environments. The motors can be operated direct-on-line (DOL), or with variable speed converters (VSD), see details below and in the instruction manual. For VSD the max speed is 5400 rpm.

For nomenclature and further details, see the Annex to this certificate.

## **SPECIFIC CONDITIONS OF USE: YES as shown below:**

The ambient temperature range for DOL operation is limited to -40 °C ... +60 °C.

The ambient temperature range for VSD operation is limited to -40 °C ... +50 °C.

The ambient temperature range for special size HMCX-280M-2 105kW 440V 60Hz is limited to: -40 °C ... +50 °C.

The ambient temperature range for special size HMCX-315L2-4 250kW 440V 60Hz is limited to: -40 °C ... +50 °C

For repair of the flameproof joints due regard must be given to the structural specifications provided by the manufacturer. Repair in compliance with the values in Tables 1 and 2 of IEC 60079-1 is not allowed.

All electrical connections shall be tightened with the tightening torques specified in the manufacturer's instructions.

For VSD operation and for duty types other than S1, the motor temperature shall be monitored by the resistance thermometers, or PTC-thermistors, in the stator windings. These devices have to be connected to suitable tripping units that have been functionally tested for this purpose.

For VSD operation, the manufacturer's instructions for machine fed from converters have to be respected.

For VSD operation, the motor was tested with converter power source, with the following specifications:

- switching frequency:  $\geq 2000$  Hz
- inverter output  $du/dt$ :  $\leq 1500$  V/ $\mu$ s

Use fasteners with a minimum yield stress of 640 N/mm<sup>2</sup>.



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## **DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

### Changes for issue 1:

- extension of motor range to frame sizes 80-355
- correction of nomenclature
- correction of specific conditions regarding VSD operation
- addition of Chinese manufacturing locations

### Changes for issue 2:

- addition of Terminal Boxes in Ex 'db':
  - additional Ex code: Ex db IIB/IIC T4 Gb
- addition of Dust protection Ex 'tb/tc':
  - additional Ex code: Ex tb IIIB/IIIC T130°C Db or Ex tc IIIB/IIIC T130°C Dc

### Changes for issue 3:

Addition of the following motor models:

Motor model : HMCX-200

Specification : terminal box on the NDE, with sea wave proof fan cover

Ex code : Ex db eb IIB/IIC T4 Gb

Electrical parameters : 50Hz (VSD:5-75Hz) / 60Hz (VSD:6-90Hz)

Motor model : HMCX-280

Specification : terminal box on the NDE, with sea wave proof fan cover

Ex code : Ex db eb IIC T4 Gb

Electrical parameters : 60Hz (VSD:6-100Hz)

Motor model : HMCX-315

Specification : terminal box on the NDE, with sea wave proof fan cover

Ex code : Ex db eb IIC T4 Gb

Electrical parameters : 50Hz (VSD:5-75Hz) / 60Hz (VSD:6-90Hz)

The ambient temperature range for DOL operation is limited to -40 °C ... +60 °C.

The ambient temperature range for VSD operation is limited to -40 °C ... +50 °C.



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**Additional information:**

The enclosure of the explosion proof three-phase induction motors model HMCX-80-355, successfully passed the tests for the Ingress Protection level IP66 to IEC 60529. The IP degree can be specified as IP55/IP56/IP65/IP66, depending on motor variation and client request.

**Annex:**

[P20092IA-CCA3 certificate IECEx CNEX 19.0019X issue 3 Annex.pdf](#)



## Annex to Certificate IECEx CNEX 19.0019X Issue 3

Equipment or Protective System: **Explosion proof three-phase induction motors  
Model HMCX-80-355**

Applicant: **Svend Hoyer A/S**

Address: **Over Hadstenvej 42, DK-8370 Hadsten, Denmark**

### Nomenclature for motor model HMCX-315ab-c

HM - Hoyer Motor  
C - Cast Iron  
X - Explosion proof  
315 - shaft height (80, 90, 100, 112, 132, 160, 180, 200, 225, 250, 280, 315, 355)  
a - Frame length: M = medium frame, L = long frame, S = short frame  
b - Core length: 1 = short core, 2 = long core  
c - Number of poles: 2, 4, 6, 8, 10, 12, 14, 16

### Motor models covered:

The motor models that are covered by this certificate are detailed in the Test Report Cover document. (ref. CQST1912G004).

### Electrical Data:

Rated voltages for power  $\leq 3\text{kW}$ : 200V, 220V, 230V, 240V, 290V, 380V, 400V, 415V, 440V, 460V, 480V, 500V, 525V, 550V, 575V, 660V, 690V, 220/380V, 230/400V, 240/415V, 380/660V, 400/690V, 50/60Hz

Rated voltages for power  $>3\text{kW}$  and frame size 112-280: 112-280V, 230V, 290V, 380V, 400V, 415V, 440V, 460V, 480V, 500V, 525V, 550V, 575V, 660V, 690V, 380/660V, 400/690V, 50/60Hz

Rated voltages for power  $>3\text{kW}$  and frame size 315-355: 230V, 290V, 380V, 400V, 415V, 440V, 460V, 480V, 500V, 525V, 550V, 575V, 660V, 690V, 720V, 1000V, 1140V, 380/660V, 400/690V, 415/720V, 550/950V, 660/1140V, 50Hz/60Hz

Rated power ..... : 0.37 kW to 375 kW

Rated frequency ....: 50Hz/60Hz

Note: The motors are originally designed for 400V AC, 50 Hz. When used with 60Hz and voltages different from 400V, the rated power can be multiplied by the following factor:

Rated voltage (V)	380	400	415	440	460	480
Multiplication factor	1	1	1.05	1.1	1.15	1.2

See the Test Report Cover Sheet (ref. CQST1912G004 and CQST2002G002), for the electrical data per motor model.

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Certification Body: CNEX-Global B.V., Utrechtseweg 310-B38, 6812 AR, Arnhem, the Netherlands

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## **Annex to Certificate IECEx CNEX 19.0019X Issue 3**

### Descriptive Documents:

Detailed in the Test Report Cover document.  
(ref. CQST1912G004)

### Mounting Instructions:

See manufacturer's instructions.

### Installation Instructions:

All cable entry devices and blanking elements shall be certified to valid standards for use in explosive gas or dust atmospheres (as applicable), with the same IP rating as the motor, suitable for the conditions of use and correctly installed.

All parts installed in the Ex e terminal box shall be certified to valid standards for use in explosive gas atmospheres, suitable for the conditions of use and correctly installed.

Unused apertures shall be closed with suitable certified blanking elements. See manufacturer's instructions.

### Routine tests:

Routine overpressure tests on enclosure parts are detailed in the Test Report Cover Sheet.  
(ref. CQST1912G004)

## Annex to Certificate IECEx CNEX 19.0019X Issue 3

### Annex A – Motor models covered by this certificate:

Frame size	No. of poles	Power [kW]	Frequency [Hz]	Model numbers
80	2	0.75	50/60	HMCX-80M1-2
	2	1.1	50/60	HMCX-80M2-2
	4	0.55	50/60	HMCX-80M1-4
	4	0.75	50/60	HMCX-80M2-4
	6	0.37	50/60	HMCX-80M1-6
	6	0.55	50/60	HMCX-80M2-6
90	2	1.5	50/60	HMCX-90S-2
	2	2.2	50/60	HMCX-90L-2
	4	1.1	50/60	HMCX-90S-4
	4	1.5	50/60	HMCX-90L-4
	6	0.75	50/60	HMCX-90S-6
	6	1.1	50/60	HMCX-90L-6
100	2	3	50/60	HMCX-100L-2
	4	2.2	50/60	HMCX-100L1-4
	4	3	50/60	HMCX-100L2-4
	6	1.5	50/60	HMCX-100L-6
	8	0.75	50/60	HMCX-100L1-8
	8	1.1	50/60	HMCX-100L2-8
112	2	4	50/60	HMCX-112M-2
	4	4	50/60	HMCX-112M-4
	6	2.2	50/60	HMCX-112M-6
	8	1.5	50/60	HMCX-112M-8
132	2	5.5	50/60	HMCX-132S1-2
	2	7.5	50/60	HMCX-132S2-2
	4	5.5	50/60	HMCX-132S-4
	4	7.5	50/60	HMCX-132M-4
	6	3	50/60	HMCX-132S-6
	6	4	50/60	HMCX-132M1-6
	6	5.5	50/60	HMCX-132M2-6
	8	2.2	50/60	HMCX-132S-8
	8	3	50/60	HMCX-132M-8
160	2	11	50/60	HMCX-160M1-2
	2	15	50/60	HMCX-160M2-2
	2	18.5	50/60	HMCX-160L-2
	4	11	50/60	HMCX-160M-4

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	4	15	50/60	HMCX-160L-4
	6	7.5	50/60	HMCX-160M-6
	6	11	50/60	HMCX-160L-6
	8	4	50/60	HMCX-160M1-8
	8	5.5	50/60	HMCX-160M2-8
	8	7.5	50/60	HMCX-160L-8
180	2	22	50/60	HMCX-180M-2
	4	18.5	50/60	HMCX-180M-4
	4	22	50/60	HMCX-180L-4
	6	15	50/60	HMCX-180L-6
	8	11	50/60	HMCX-180L-8
200	2	30	50/60	HMCX-200L1-2
	2	37	50/60	HMCX-200L2-2
	4	30	50/60	HMCX-200L-4
	6	18.5	50/60	HMCX-200L1-6
	6	22	50/60	HMCX-200L2-6
	8	15	50/60	HMCX-200L-8
225	2	45	50/60	HMCX-225M-2
	4	37	50/60	HMCX-225S-4
	4	45	50/60	HMCX-225M-4
	6	30	50/60	HMCX-225M-6
	8	18.5	50/60	HMCX-225S-8
	8	22	50/60	HMCX-225M-8
	10	15	50/60	HMCX-225S-10
	10	18.5	50/60	HMCX-225M-10
250	2	55	50/60	HMCX-250M-2
	4	55	50/60	HMCX-250M-4
	6	37	50/60	HMCX-250M-6
	8	30	50/60	HMCX-250M-8
	10	22	50/60	HMCX-250M-10
	12	18.5	50/60	HMCX-250M-12
280	2	75	50/60	HMCX-280S-2
	2	90	50/60	HMCX-280M-2
	4	75	50/60	HMCX-280S-4
	4	90	50/60	HMCX-280M-4
	6	45	50/60	HMCX-280S-6
	6	55	50/60	HMCX-280M-6
	8	37	50/60	HMCX-280S-8
	8	45	50/60	HMCX-280M-8

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## Annex to Certificate IECEx CNEX 19.0019X Issue 3

	10	30	50/60	HMCX-280S-10
	10	37	50/60	HMCX-280M-10
	12	22	50/60	HMCX-280S-12
	12	30	50/60	HMCX-280M-12
	14	18.5	50/60	HMCX-280S-14
	14	22	50/60	HMCX-280M-14
315	2	110	50/60	HMCX-315S-2
	2	132	50/60	HMCX-315M-2
	2	160	50/60	HMCX-315L1-2
	2	185	50/60	HMCX-315L-2
	2	200	50/60	HMCX-315L2-2
	4	110	50/60	HMCX-315S-4
	4	132	50/60	HMCX-315M-4
	4	160	50/60	HMCX-315L1-4
	4	185	50/60	HMCX-315L-4
	4	200	50/60	HMCX-315L2-4
	4	250	50/60	HMCX-315L2-4
	6	75	50/60	HMCX-315S-6
	6	90	50/60	HMCX-315M-6
	6	110	50/60	HMCX-315L1-6
	6	132	50/60	HMCX-315L2-6
	8	55	50/60	HMCX-315S-8
	8	75	50/60	HMCX-315M-8
	8	90	50/60	HMCX-315L1-8
	8	110	50/60	HMCX-315L2-8
	10	45	50/60	HMCX-315S-10
	10	55	50/60	HMCX-315M-10
	10	75	50/60	HMCX-315L1-10
	10	90	50/60	HMCX-315L2-10
	12	37	50/60	HMCX-315S-12
	12	45	50/60	HMCX-315M-12
	12	55	50/60	HMCX-315L1-12
	12	75	50/60	HMCX-315L2-12
	14	30	50/60	HMCX-315S-14
	14	37	50/60	HMCX-315M-14
	14	45	50/60	HMCX-315L1-14
	14	55	50/60	HMCX-315L2-14
	16	22	50/60	HMCX-315S-16
16	30	50/60	HMCX-315M-16	

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355	16	37	50/60	HMCX-315L1-16
	16	45	50/60	HMCX-315L2-16
	2	185	50/60	HMCX-355S1-2
	2	200	50/60	HMCX-355S2-2
	2	220	50/60	HMCX-355M1-2
	2	250	50/60	HMCX-355M2-2
	2	280	50/60	HMCX-355L1-2
	2	315	50/60	HMCX-355L2-2
	2	355	50/60	HMCX-355LX1-2
	2	375	50/60	HMCX-355LX2-2
	4	185	50/60	HMCX-355S1-4
	4	200	50/60	HMCX-355S2-4
	4	220	50/60	HMCX-355M1-4
	4	250	50/60	HMCX-355M2-4
	4	280	50/60	HMCX-355L1-4
	4	315	50/60	HMCX-355L2-4
	4	355	50/60	HMCX-355LX1-4
	4	375	50/60	HMCX-355LX2-4
	6	160	50/60	HMCX-355S-6
	6	185	50/60	HMCX-355M1-6
	6	200	50/60	HMCX-355M2-6
	6	220	50/60	HMCX-355L1-6
	6	250	50/60	HMCX-355L2-6
	6	280	50/60	HMCX-355LX1-6
	6	315	50/60	HMCX-355LX2-6
	8	132	50/60	HMCX-355S-8
	8	160	50/60	HMCX-355M-8
	8	185	50/60	HMCX-355L1-8
	8	200	50/60	HMCX-355L2-8
	8	220	50/60	HMCX-355LX1-8
	8	250	50/60	HMCX-355LX2-8
	10	90	50/60	HMCX-355S-10
	10	110	50/60	HMCX-355M1-10
	10	132	50/60	HMCX-355M2-10
	10	160	50/60	HMCX-355L1-10
	10	185	50/60	HMCX-355L2-10
	10	200	50/60	HMCX-355LX1-10
	12	75	50/60	HMCX-355S-12
	12	90	50/60	HMCX-355M1-12

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12	110	50/60	HMCX-355M2-12
12	132	50/60	HMCX-355L1-12
12	160	50/60	HMCX-355L2-12
12	185	50/60	HMCX-355LX1-12
14	75	50/60	HMCX-355S-14
14	90	50/60	HMCX-355M1-14
14	110	50/60	HMCX-355M2-14
14	132	50/60	HMCX-355L-14
14	160	50/60	HMCX-355LX1-14
16	55	50/60	HMCX-355S-16
16	75	50/60	HMCX-355M1-16
16	90	50/60	HMCX-355M2-16
16	110	50/60	HMCX-355L-16
16	132	50/60	HMCX-355LX1-16

Additionally, two higher power motor versions are covered in this certificate:

- Motor model HMCX-280M-2:  
 Rated voltage: 440 V, 60 Hz  
 Rated power: 105kW  
 Ambient temperature range: -40 °C ... +50 °C.
- Motor model HMCX-315L2-4:  
 Rated voltage: 440 V, 60 Hz  
 Rated power: 250kW  
 Ambient temperature range: -40 °C ... +50 °C.