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# [1] EU-TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use  
in Potentially Explosive Atmospheres  
Directive 2014/34/EU**



[3] EU-Type Examination Certificate Number: **CNEX 19 ATEX 0028 X Issue 2**

[4] Equipment : **Explosion proof three-phase induction motor Models HMCX-80-355**

[5] Manufacturer : **Svend Hoyer A/S**

[6] Address : **Over Hadstensevej 42, DK-8370 Hadsten, Denmark**

[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] CNEX-Global B.V., Notified Body number 2614, in accordance with Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 Report No. 20051.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN IEC 60079-0:2018 EN 60079-1:2014 EN 60079-7:2015/A1:2018 EN 60079-31:2014**

except in respect of those requirements listed at item 18 of the Schedule.

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to specific conditions for use specified in the schedule to this certificate.

[11] This EU – Type examination certificate relates only to the design and construction of the specified equipment or protective system. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

II 2G Ex db eb IIB/IIC T4 Gb or Ex db IIB/IIC T4 Gb

II 2D Ex tb IIB/IIC T130°C Db or II 3D Ex tc IIB/IIC T130°C Dc

**Certification officer** : Hou Yandong

**Signature:**

**Date of issue** : 2020-07-07

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

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[15] Description of equipment:

Explosion proof three-phase induction motor models HMCX-80-355, with self-ventilated, squirrel-cage rotor and seated with ball bearings or roller bearings. The enclosure of the motors is made of cast iron and terminal box is made of cast iron or stainless steel. The enclosure of the motor is constructed in type of protection '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 convertors (VSD), see details below and in the instruction manual. For VSD the max speed is 5400 rpm.

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 Annex A of this certificate and in the Test Report Cover document. (ref. CQST1912G004 and CQST2002G002).

Electrical Data:

Rated voltages for power ≤3kW:

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 >3kW 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 >3kW 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

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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.

Mounting Instructions:

See manufacturer's instructions.

Installation Instructions:

All cable entry devices and blanking elements shall be certified 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. Unused apertures shall be closed with suitable certified blanking elements.

See manufacturer's instructions.

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.

Routine tests:

Routine overpressure tests on enclosure parts are detailed in the Test Report Cover Sheet. (ref. CQST1912G004 and CQST2002G002).

[16] Descriptive Documents:

Detailed in the Test Report Cover document. (ref. CQST1912G004 and CQST2002G002).

[17] Specific Conditions for Use:

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

The ambient temperature range for VSD operations is limited to -40 °C ...+50 °C (for frame sizes 80-315) and to -40 °C ...+45 °C (for frame size 355).

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.

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[17] Specific Conditions for Use (continued):

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 EN 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 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. The following VSD operation parameters must be complied with:

- 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>.

[18] Essential Health and Safety Requirements:

The Essential Health and Safety Requirements are covered by the standards listed at item [9].

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in ANNEX III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.

Additional Information:

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

Additional manufacturing locations:

Svend Hoyer Power Transmission Ningbo Co., LTD.

No. 19, JingWu Middle Road, Beilun District, Ningbo Zhejiang (315821), P.R. China



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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/IIIC 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**

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### 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	180	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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	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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	16	37	50/60	HMCX-315L1-16
	16	45	50/60	HMCX-315L2-16
355	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.