IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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Certificate No.:	**IECEx KLCS 24.0029X**	Page 1 of 3	Certificate history:
Status:	**Current**	Issue No: 0	
Date of Issue:	2024-04-04		
Applicant:	**HEM Industries** Survey No. 738/1, Somnath, Nani Daman, Daman (U.T.) 396210 **India**		
Equipment:	**Range of 3 Phase A.C. Squirrel Cage Induction Motors Frame sizes - 63 FLP to 315LX FLP**		
Optional accessory:			
Type of Protection:	**flameproof enclosure "d"**		
Marking:	Ex db IIB T6…T3* Gb (Tamb = -20°C to +**°C) (*/** Refer Table 3 and 4 in ANNEX to IECEx KLCS 24.0029X)		

Approved for issue on behalf of the IECEx Certification Body: **Vikram Paranjpe**

Position: **Dy. Director (Operations)**

Signature:
(for printed version)

Date:
(for printed version)

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Maharashtra 401501
India

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Certificate No.: **IECEx KLCS 24.0029X**

Date of issue: 2024-04-04

Issue No: 0

Manufacturer: **HEM Industries**
Survey No. 738/1, Somnath,
Nani Daman,
Daman (U.T.) 396210
India

Manufacturing locations:

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 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

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 Report:

IN/KLCS/ExTR24.0029/00

Quality Assessment Report:

IN/KLCS/QAR24.0006/00

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The 63 FLP to 315LX FLP series are Squirrel Cage Induction Motors. The motors comprise stator frame and end covers. The stator frames are fitted with a main terminal box. The motors of frame size 160 FLP to 315 LX FLP may be provided with auxiliary terminal boxes for terminating space heater/ thermistor leads.

The main terminal box is attached to the stator frame and “lead wires” are brought inside the terminal box for connection to the external supply through the moulded terminal bushings cemented inside the terminal box.

The method of cooling is TEFC (Totally enclosed fan cooled). The motors are fitted with external cooling fans and fan covers at the non-drive end.

The shaft is mounted on 2 nos. of grease lubricated rolling element bearings and provided with shaft seals at both the ends. The motor contains end covers at driving and non-driving end which are fastened to the motor frame by socket head cap screws. All metric fasteners used for assembling the motor are high tensile carbon steel socket head cap screws/ hexagonal head screws of property class 10.9 with yield strength of 640 N/mm².

For details on Electrical Ratings, Temperature Class, Ambient Temperature & Alternative features / Variations please Refer ANNEX to IECEx KLCS 24.0029X

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The manufacturer has maintained more stringent gap and larger flamepath length than required by the standard. User must refer to manufacturer before carrying out any repairs or refurbishment to the motor.
2. When PTC thermistors are used, they shall be connected into a control circuit such that the motor is disconnected from the supply in the event of a winding reaching the temperature rating of the thermistor as listed in Table 4 in product description.
3. When motors are supplied by a converter (VFD), the motors will be fitted with thermal protection (PTC) thermistors, into the stator winding and shall be connected into a control circuit such that the motor is de-energised from the supply in the event of the winding reaching a temperature of 150°C.
4. Space heaters (if provided) shall be energized only after disconnecting main supply of motor.
5. The fastening screws shall be of high tensile carbon steel socket head cap screws / Hexagonal head screws of property class 10.9 with minimum yield strength of 640 MPa.

Annex:

Annex to IECEx KLCS 24.0029X.pdf

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Date: 04/04/2024

1. Electrical Rating:

These ranges of motors are manufactured in different ratings as shown in the table 1 with a three phase electrical supply, The motors are rated up to 600 V, 50/60 Hz & S1 duty with a supply variation no more than ±5% on frequency and ±10% on voltage or combined variation of ±10% (corresponding to Zone B in IEC 60034-1 clause 7.3). The motors can also have S3/S4 duty cycle for which the electrical ratings are detailed in Table 2.

TABLE 1: -

Frame size	Maximum Output in kW											
	2 Pole		4 Pole		6 Pole		8 Pole		10 Pole		12 Pole	
	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
63 FLP	0.25	0.28	0.18	N.A.	N.A.		N.A.		N.A.		N.A.	
71 FLP	0.55	0.60	0.37	N.A.	0.25	0.28	0.12	0.14	N.A.		N.A.	
80 FLP	1.1	1.3	0.75	0.86	0.55	0.60	0.25	0.28	N.A.		N.A.	
90S FLP	1.5	1.7	1.1	1.3	0.75	0.86	0.37	0.42	N.A.		N.A.	
90L FLP	2.2	2.5	1.5	1.7	1.1	1.3	0.55	0.60	N.A.		N.A.	
100L FLP	3.7	4.3	3.0	3.4	1.5	1.7	1.1	1.3	N.A.		N.A.	
112M FLP	5.5	6.3	3.7	4.3	2.2	2.5	1.5	1.7	N.A.		N.A.	
132S FLP	7.5	8.6	5.5	6.3	3.7	4.3	2.2	2.5	1.5	1.7	1.1	1.3
132M FLP	9.3	11	7.5	8.6	5.5	6.3	N.A.		2.2	2.5	1.5	1.7
160M FLP	15	17	11	12.7	7.5	8.6	5.5	6.3	3.7	4.3	2.2	2.5
160L FLP	18.5	21	15	17	11	12.7	7.5	8.6	N.A.		3.7	4.3
180M FLP	22	25	18.5	21	N.A.		9.3	11	5.5	6.3	5.5	6.3
180L FLP	N.A.		22	25	15	17	11	12.7	11	12.7	9.3	11
200L FLP	37	42.5	30	34	22	25	15	17	15	17	11	12.7
225S FLP	N.A.		N.A.		N.A.		N.A.		N.A.		N.A.	
225M FLP	45	50	N.A.		N.A.		N.A.		N.A.		N.A.	
225SX FLP	N.A.		37	42.5	N.A.		18.5	20.3	N.A.		N.A.	
225MX FLP	N.A.		45	50	30	34	22	24	18.5	20.3	15	17
250M FLP	55	60	N.A.		N.A.		N.A.		N.A.		N.A.	
250MX FLP	N.A.		55	60	37	42.5	30	33	N.A.		18.5	20.3
280S FLP	75	83	N.A.		N.A.		N.A.		N.A.		N.A.	
280M FLP	90	99	N.A.		N.A.		N.A.		N.A.		N.A.	
280SX FLP	N.A.		75	83	45	50	37	41	N.A.		22	24
280MX FLP	N.A.		90	99	55	60	45	49	N.A.		30	33
315S FLP	110	115	N.A.		N.A.		N.A.		N.A.		N.A.	
315M FLP	132	140	N.A.		N.A.		N.A.		N.A.		N.A.	
315L FLP	200	210	N.A.		N.A.		N.A.		N.A.		N.A.	
315SX FLP	N.A.		110	115	75	83	55	58	N.A.		37	41
315MX FLP	N.A.		132	140	110	115	90	95	N.A.		45	49
315LX FLP	N.A.		200	210	132	138	132	138	N.A.		N.A.	

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TABLE – 2

- **Motors with S3/S4 duty, 150/300 starts/hour, CDF 25% or 40% or 60%, 50Hz/ 60Hz.**

Frame Size	Maximum Output in kW		
	4 Pole	6 Pole	8 Pole
71 FLP	0.37	0.25	0.12
80 FLP	0.75	0.55	0.25
90S FLP	1.1	0.75	0.37
90L FLP	1.5	1.1	0.55
100L FLP	2.2	1.5	1.1
112M FLP	3.7	2.2	1.5
132S FLP	5.5	3.7	2.2
132M FLP	7.5	5.5	N.A.
160M FLP	11	7.5	5.5
160L FLP	15	11	7.5
180M FLP	18.5	N.A.	9.3
180L FLP	22	15	11
200L FLP	30	22	15
225SX FLP	37	N.A.	18.5
225MX FLP	45	30	22
250MX FLP	55	37	30
280SX FLP	75	45	37
280MX FLP	90	55	45
315SX FLP	110	75	55
315MX FLP	132	110	90
315LX FLP	180	132	110

2. Temperature Class and Ambient Temperature

The motor (*) temperature class and the maximum (**) ambient temperature ranges are as describe in table below:-

TABLE – 3

Frame size	*Temperature Class ** Max. Ambient Temperature °C				
	*T6	*T5	*T4	*T3	*T3 (VFD Duty and ratings specified in Table 1 with PTC thermistors of 150°C)
63 FLP	**50	**60	**60	**60	**60
71 FLP	N.A.	**50	**60	**60	**60
80 FLP	N.A.	**50	**60	**60	**60
90S FLP	**40	**50	**60	**60	**60
90L FLP	**40	**50	**60	**60	**60
100L FLP	N.A.	**50	**60	**60	**60
112M FLP	N.A.	**50	**60	**60	**60

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Frame size	*Temperature Class ** Max. Ambient Temperature °C				
	*T6	*T5	*T4	*T3	*T3 (VFD Duty and ratings specified in Table 1 with PTC thermistors of 150°C)
132S FLP	N.A.	**50	**60	**60	**60
132M FLP	**45	**60	**60	**60	**60
160M FLP	N.A.	**50	**60	**60	**60
160L FLP	N.A.	**50	**60	**60	**60
180M FLP	N.A.	**50	**60	**60	**60
180L FLP	N.A.	**50	**60	**60	**60
200L FLP	**45	**60	**60	**60	**60
225S FLP	N.A.	N.A.	**60	**60	**60
225M FLP	N.A.	N.A.	**60	**60	**60
225SX FLP	N.A.	N.A.	**60	**60	**60
225MX FLP	N.A.	N.A.	**60	**60	**60
250M FLP	N.A.	N.A.	**60	**60	**60
250MX FLP	N.A.	N.A.	**60	**60	**60
280S FLP	N.A.	N.A.	**60	**60	**60
280M FLP	**50	**60	**60	**60	**60
280SX FLP	**50	**60	**60	**60	**60
280MX FLP	**50	**60	**60	**60	**60
315S FLP	**45	**60	**60	**60	**60
315M FLP	**45	**60	**60	**60	**60
315L FLP	**45	**60	**60	**60	**60
315SX FLP	**45	**60	**60	**60	**60
315MX FLP	N.A.	N.A.	**40	**60	**60
315LX FLP	N.A.	N.A.	**40	**60	**60

3. ALTERNATIVE FEATURES / ALTERNATIVE PERMISSIBLE VARIATIONS WITH CONDITIONS WEHEREVER APPLICABLE: -

1) Class of insulation can be F or H.

2) Motors can have various mounting like foot mounting, face mounting, flange mounting, foot cum flange/ face mounting, double flange mounting or pad mounting.

3) The position of terminal box with respect to foot may be at 90° or 180° or at any intermediate angle.

4) The motor may be provided with shaft extension at non driving end.

5) Deep groove ball bearing 2Z type / angular contact ball / cylindrical roller/ taper roller bearings can be provided. Ball bearings can be insulated, hybrid and shielded type Z or ZZ, sealed type RS or 2RS.

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6) Motors marked for IP66 rating are also good for IP54, IP55, IP56 and IP65 requirement.

7) Alternative temperature classifications with de-rated output, alternative duty cycles, dual voltage as indicated in Table 4 below.

TABLE 4: -

Item	Temperature classification "T3"	Temperature classification "T4"	Temperature classification "T5"	Temperature classification "T6"	Condition
Standard output as Table-1	All outputs as Table-1	All outputs as Table-1 for frame 63 FLP to 315SX FLP	All outputs derated to 80% with 90 deg C thermistors in each winding.	All outputs as table1-derated to 60% with 80 deg C thermistor in each winding.	S1 & S2-60 minutes duty. 50/60 Hz
Insulation class F, H and above and temperature rise limited to class B	All outputs as Table-1	All outputs as Table-1 for frame 63 FLP to 315SX FLP	All outputs derated to 80% with 90 deg C thermistors in each winding.	All outputs as table1-derated to 60% with 80 deg C thermistor in each winding.	S1 & S2-60 minutes duty. 50/60 Hz
Insulation class F,H and above and temperature rise limited to class F	All outputs as Table-1	All outputs as Table-1 derated to 80% with 130 deg C thermistors in each winding.	Not applicable	Not applicable	S1 & S2-60 minutes duty. 50/60 Hz
Duty from S3 to S4	All outputs as Table-2 with 150°C thermistors in each winding	All outputs as Table-2 derated to 80% with 130°C thermistors in each winding	All outputs as Table -2 de-rated to 60% with 90°C thermistors in each winding	Not applicable	Insulation class F,H and above. Temperature rise limited to Class B or F. 50/60 Hz
Dual voltage with star/delta connections with flux and current densities as rated voltage	All outputs as Table-1	All outputs as Table-1 for frame 63 FLP to 315SX FLP	All outputs as Table-1 derated to 80% with 90 deg C thermistors in each winding.	All outputs as Table -1 de-rated to 60% with 80°C thermistors in each winding	S1 & S2 - 60 minutes duty. Insulation class F,H and above. Temperature rise limited to Class B or F. 50/60 Hz
Ambient temperature above 40°C up to 50°C	All outputs as Table-1	All outputs as Table-1 for frame 63 FLP to 315SX FLP	All outputs as Table-1 derated to 80% with 90 deg C thermistors in each winding.	All outputs as Table -1 de-rated to 60% with 80°C thermistors in each winding	S1 & S2 - 60 minutes duty . Insulation class F ,H and above. Temperature rise limited to Class B or F. 50/60Hz.
Ambient temperature above 50°C up to 60°C	All outputs as Table-1	All outputs as Table-1 for frame 63 FLP to 315SX FLP derated to 90% with 130 deg C thermistors in each winding.	All outputs as Table-1 derated to 70% with 90 deg C thermistors in each winding.	All outputs as Table -1 de-rated to 50% with 80°C thermistors in each winding	S1 & S2 - 60 minutes duty . Insulation class F ,H and above. Temperature rise limited to Class B or F. 50/60Hz.

END OF DOCUMENT