# EU - TYPE EXAMINATION CERTIFICATE

**Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

| | | |
|---|---|---|
| **3** | EU - Type Examination Certificate Number: | **SGS24ATEX0022X** |
| **4** | Product: | **Range of 3 Phase A.C. Squirrel Cage Induction Motors 63FLP to 315LX FLP** |
| **5** | Manufacturer: | **HEM Industries** |
| **6** | Address: | **Survey No. 738/1, Somnath, Nani Daman, Daman- 396 210 (U.T.), INDIA** |

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

**8** SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 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 Report No. **21(C)0477**

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

**EN IEC 60079-0: 2018 EN 60079-1: 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 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. 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:

**Ⓔx II 2 G Ex db IIB T6…T3* Gb (Tamb = -20°C to +**°C)**

**(*/** Refer to Table 3 and 4 in Description of Product)**

SGS Fimko Oy Customer Reference No. **8026** Project File No. **21/0477**

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13 # Schedule

14 ## Certificate Number SGS24ATEX0022X

### 15 Description of Product

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.

**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 S2/S3 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 |

| 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 |
| 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. | |

**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 |

**TABLE – 3**

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

| **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 |
| 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 |

**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.

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°C thermistors in each winding. | All outputs as table1-derated to 60% with 80°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°C thermistors in each winding. | All outputs as table1-derated to 60% with 80°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°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°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°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°C thermistors in each winding. | All outputs as Table-1 derated to 70% with 90°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. |

## 16 Report Number

21(C)0477

## 17 Specific Conditions of Use

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.

## 18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

| Clause | Subject |
|---|---|
| 1.2.7 | LVD type requirements |
| 1.2.8 | Overloading of equipment (protection relays, etc.) |
| 1.4.1 | External effects |
| 1.4.2 | Aggressive substances, etc. |

## 19 Drawings and Documents

| Number | Sheet | Issue | Date | Description |
|---|---|---|---|---|
| 33-06-050-0004 | 1 to 22 | 0 | 10/11/2023 | Flameproof Motor General Construction Details |