

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Circuit Breaker**with type designation(s)  
**HGM 250E/S/H/L, HGM 160E/S/H/L**

Issued to

**Hyundai Electric & Energy Systems Co., Ltd.**  
**ULSAN, Republic of Korea**is found to comply with  
**DNV GL rules for classification – Ships, offshore units, and high speed and light craft****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Rated voltage (V) 220 / 240 / 380 / 415 / 440 / 460 VAC**  
**Rated current (A) See page 2**Issued at **Busan** on **2020-02-04**for **DNV GL**This Certificate is valid until **2025-02-04**.  
DNV GL local station: **Ulsan HHI & HMD**Approval Engineer: **Baeg Soon Choi**

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**Andreas Kristoffersen**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Job Id: **262.1-033295-1**  
Certificate No: **TAE00001X1**  
Revision No: **1**

## Product description

Moulded Case Circuit Breaker

Type HGM 250E/S/H/L, HGM 160E/S/H/L

Number of Poles : 2P, 3P and 4P (unprotected N pole)  
Protected Pole : 2 or 3  
Rated frequency : 50 / 60 Hz  
Rated operational Voltage (Ue) : 220 / 240 / 380 / 415 / 440 / 460 VAC  
Rated insulation Voltage (Ui) : 1000 VAC  
Rated impulse withstand Voltage (Uimp) : 8 kV

Rated short-circuit-capacity:

Rated short-time making capacity : Icm (kA)  
E series : 105 [220 /240 V] 40,0 [380 / 415 / 440 / 460 V]  
S series : 143 [220 /240 V] 54,6 [380 / 415 / 440 / 460 V]  
H series : 187 [220 /240 V] 79,8 [380 / 415 / 440 / 460 V]  
L series : 220 [220 /240 V] 121,0 [380 / 415 / 440 / 460 V]

Rated ultimate short-circuit breaking capacity : Icu (kA)  
E series : 50 [220 /240 V] 20 [380 / 415 / 440 / 460 V]  
S series : 65 [220 /240 V] 26 [380 / 415 / 440 / 460 V]  
H series : 85 [220 /240 V] 38 [380 / 415 / 440 / 460 V]  
L series : 100 [220 /240 V] 55 [380 / 415 / 440 / 460 V]

Rated service short-circuit breaking capacity : Ics (kA)  
Ics: 100% Icu

Rated current (In) (40°) 250 series : 100A up to 250A  
160 series : 100A up to 160A  
Rated operational current (Ie) : 0,8 - 1,0 In or fixed  
Type of release : Thermo-magnetic  
Circuit Breaker for use in IT systems : Suitable  
Utilization Category : A  
Suitable for Insulation : Suitable  
Method of Mounting : Fixed

## Application/Limitation

Location Classes:

Temperature : B, Humidity : B, Vibration : A, Enclosure : A

## Type Approval documentation

Test report : IECCE CB Scheme NL-26294 dated 2013-05-29  
Ontech R142R-032 dated 2014-02-18  
Ontech R143R-023 dated 2014-03-11

Type Approval Assessment Report dated 2020-02-14

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## Tests carried out

Type tests according to IEC60947-2

Environmental tests in accordance with DNVGL-CG-0339: Power supply variation, vibration, damp heat and dry heat.

## Marking of product

Manufacturers label containing data and manufacturers type number.

## Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE