

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Circuit Breaker**with type designation(s)
UAN(HGN)

Issued to

**Hyundai Heavy Industries Co.,Ltd. Electro Electric Systems
ULSAN, Republic of Korea**

is found to comply with

**Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det
Norske Veritas' Offshore Standards
IEC 60947-2****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.****Rated Voltage (V) 690
Rated Current (A) 630 - 5000
Frequency (Hz) 50/60**This Certificate is valid until **2020-12-31**.Issued at **Busan** on **2016-02-17**DNV GL local station: **Ulsan**Approval Engineer: **Eun Sook Kim**for **DNV GL**

**Baeg Soon Choi
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.

Product description

I) Air circuit breaker with the following data: A FRAME

	UAN06A	UAN08A	UAN10A	UAN12A	UAN16A	UAN20A
Rated insulation voltage AC (V)	1000	1000	1000	1000	1000	1000
Rated operational voltage AC(V)	690/500	690/500	690/500	690/500	690/500	690/500
Rated Current, at 40°C (A)	630	800	1000	1250	1600	2000
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity I _{cs} = 100% I _{cu} (kA)	65/85	65/85	65/85	65/85	65/85	65/85
Rated making Capacity (kA)	143/187	143/187	143/187	143/187	143/187	143/187
Rated short time Capacity I _{cw} (kA) 1 s	65	65	65	65	65	65
Utilization category	B	B	B	B	B	B

II) Air circuit breaker with the following data: B FRAME

	UAN06B	UAN08B	UAN10B	UAN12B	UAN16B	UAN20B
Rated insulation voltage AC (V)	1000	1000	1000	1000	1000	1000
Rated operational voltage AC(V)	690/500	690/500	690/500	690/500	690/500	690/500
Rated Current, at 40°C (A)	630	800	1000	1250	1600	2000
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity I _{cs} = 100% I _{cu} (kA)	85/100	85/100	85/100	85/100	85/100	85/100
Rated making Capacity (kA)	187/220	187/220	187/220	187/220	187/220	187/220
Rated short time Capacity I _{cw} (kA) 1 s	70/85	70/85	70/85	70/85	70/85	70/85
Utilization category	B	B	B	B	B	B

	UAN25B	UAN32B	UAN40B
Rated insulation voltage AC (V)	1000	1000	1000
Rated operational voltage AC(V)	690/500	690/500	690/500
Rated Current, at 40°C (A)	2500	3200	4000
Rated Frequency Hz	50/60	50/60	50/60
Rated Breaking Capacity I _{cs} = 100% I _{cu} (kA)	85/100	85/100	85/100
Rated making Capacity (kA)	187/220	187/220	187/220
Rated short time Capacity I _{cw} (kA) 1 s	70/85	70/85	70/85
Utilization category	B	B	B

III) Air circuit breaker with the following data: C FRAME

	UAN32C	UAN40C	UAN50C
Rated insulation voltage AC (V)	1000	1000	1000
Rated operational voltage AC(V)	690/500	690/500	690/500
Rated Current, at 40°C (A)	3200	4000	5000
Rated Frequency Hz	50/60	50/60	50/60
Rated Breaking Capacity I _{cs} = 100% I _{cu} (kA)	85/100	85/100	85/100
Rated making Capacity (kA)	187/220	187/220	187/220
Rated short time Capacity I _{cw} (kA) 1 s	70/85	70/85	70/85
Utilization category	B	B	B

Application/Limitation

Job Id: **262.1-016060-2**
Certificate No: **TAE0000027**

To be installed and tested according to DNVGL' Rules for Classification of Ships, High Speed & Light Craft and DNVGL' Offshore Standards.

The manufacturer's instructions to be observed.

Type Approval documentation

Technical Information :

- Summary of rating, Catalogue Air Circuit Breaker U-Series Page 13
- Layout drawings, 3AT-04374 ~ 04403

Test report:

- DEKRA(KEMA) Test report(IEC60947-2) : 3303091.50 issued 2012-07-10 for FRAME A
- DEKRA(KEMA) Test report(IEC60947-2) : 3304327.50 issued 2013-04-10 for FRAME B
- DEKRA(KEMA) Test report(IEC60947-2) : 3304329.50 issued 2013-04-12 for FRAME C
- ONETECH Test report(Environment including vibration) No. P13KR-064, 065 & 066 issued 2013-07-19
- ONETECH Test report(EMC) No. E13KR-084 issued 2013-09-05

Tests carried out

Type tests in accordance with IEC60947-2

Dry heat, damp heat, inclination, insulation resistance, high voltage and EMC immunity test

Periodical assessment

The scope of the retention/renewal survey is to verify that the conditions stipulated for the type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey to be dealt with:

- Ensure that type approved documentation is available.
- Ensure that materials used comply with type approved documents and/or referenced material specifications.
- Review design, materials, performance and production process with respect to possible changes, in order to ensure compliance with the type approved documentation and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV Type Approval Certificate.

Survey to be performed at least every second year.

END OF CERTIFICATE