DNV·GL

Certificate No:
TAE00002M1
File No:
823.10
Job Id:
262.1-014878-3

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Circuit Breaker

with type designation(s)
Vmax

Issued to
ABB S.p.A. - Distribution Solutions
Dalmine BG, Italy

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Medium Voltage Vacuum Circuit Breaker for installation inside switchboards / enclosures onboard ships and mobile offshore units

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.
Rated voltage (V) 12 or 17.5 kV
Rated current (A) 630 - 1250

This Certificate is valid until **2022-12-31**.

Issued at **Hamburg** on **2018-02-07**
DNV GL local station: **Milan** for **DNV GL**

Approval Engineer: **Harald Amberger**

Arne Schaarmann
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.
If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million.
In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

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Product description

Vmax: Medium voltage Vacuum Circuit Breaker for installation inside switchboards / enclosures onboard ships and mobile offshore units.

Withdrawable version designed to be connected with the compartments of **ABB UniGear switchboard**.

Types: **Vmax/L**	**12.06.25**	**12.06.32**	**12.12.25**	**12.12.32**
Rated insulation voltage (kV):	12	12	12	12
Rated operational voltage (kV):	12	12	12	12
Withstand voltage 1 min. (kV):	28	28	28	28
Impulse withstand voltage (kV):	75	75	75	75
Rated current (A):	630	630	1250	1250
Rated frequency (Hz):	50 - 60	50 - 60	50 - 60	50 - 60
Rated service short circuit breaking capacity Isc (kA):	25	31.5	25	31.5
Rated admissible short time current (3 s) Ik (kA):	25	31.5	25	31.5
Rated making capacity Ip (kA):	63	80	63	80

Types: **Vmax/L**	**17.06.25**	**17.06.32**	**17.12.25**	**17.12.32**
Rated insulation voltage (kV):	17.5	17.5	17.5	17.5
Rated operational voltage (kV):	17.5	17.5	17.5	17.5
Withstand voltage 1 min. (kV):	42	42	42	42
Impulse withstand voltage (kV):	95	95	95	95
Rated current (A):	630	630	1250	1250
Rated frequency (Hz):	50 - 60	50 - 60	50 - 60	50 - 60
Rated service short circuit breaking capacity Isc (kA):	25	31.5	25	31.5
Rated admissible short time current (3 s) Ik (kA):	25	31.5	25	31.5
Rated making capacity Ip (kA):	63	80	63	80

Withdrawable version designed to be connected with the compartments of **ABB UniSec switchboard**.

Types: **Vmax/Sec**	**12.06**			**12.12**		
Rated insulation voltage (kV):	12			12		
Rated operational voltage (kV):	12			12		
Withstand voltage 1 min. (kV):	28			28		
Impulse withstand voltage (kV):	75			75		
Rated current (A):	630			1250		
Rated frequency (Hz):	50 - 60			50 - 60		
Rated service short circuit breaking capacity Isc (kA):	16	20	25	16	20	25
Rated admissible short time current (3 s) Ik (kA):	16	20	25	16	20	25
Rated making capacity Ip (kA):	42	52	65	42	52	65

Types: **Vmax/Sec**	**17.06**			**17.12**		
Rated insulation voltage (kV):	17.5			17.5		
Rated operational voltage (kV):	17.5			17.5		
Withstand voltage 1 min. (kV):	38			42		
Impulse withstand voltage (kV):	95			95		
Rated current (A):	630			1250		
Rated frequency (Hz):	50 - 60			50 - 60		
Rated service short circuit breaking capacity Isc (kA):	16	20	25	16	20	25
Rated admissible short time current (3 s) Ik (kA):	16	20	25	16	20	25
Rated making capacity Ip (kA):	42	52	65	42	52	65

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Application/Limitation

Shall be installed and tested according to DNVGL Rules for Ships/High Speed, Light Craft and Naval Surface Craft.

Type Approval documentation

Tests carried out

Type tests in accordance with IEC 62271-1 & IEC 62271-100: Dielectric performances, temperature-rise, operation performances, mechanical endurance, and shorts-circuit making and breaking.

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

Marking of product

ABB S.p.A. Distribution Solutions – Dalmine BG Italy
Vmax/L or Vmax Sec Medium Voltage vacuum circuit breaker, Rated voltage 12 or 17.5 kV, Rated current 630 or 1250 A, Rated short time current 25 - 31.5 kA and 16 -20 - 25, Rated making currents 63 - 80kAp and 42- 52- 65kAp.

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