DNV·GL

Certificate No:
TAE000033V

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Circuit Breaker

with type designation(s)
Emax 2

Issued to
ABB S.P.A. - ABB Sace Division
Bergamo, BG, Italy

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) 400 - 690 (AC)
Rated current (A) 400 - 6300

Issued at **Hamburg** on **2018-08-29**
This Certificate is valid until **2023-06-30**.
DNV GL local station: **Milan**

Approval Engineer: **Harald Amberger**

for **DNV GL**

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.

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Job Id: **262.1-017416-3**
Certificate No: **TAE000033V**

Product description

Ratings		Emax2 Air Circuit Breakers up to 6300A (AC)						
Operating voltage U_e	V	690						
Insulation voltage U_i	V	1000						
Impulse withstand voltage U_{imp}	kV	12						
Frequency	Hz	50/60						
Number of poles		3/4						
Type of release		Electronic						
Method of installation		Fixed and withdrawable						
Utilization category		B						
Current I_n (40°C)	A	400 up to 6300						
Type		E1.2			E2.2			
Breaking Class		B	C	N	B	N	S	H
Ultimate Short-Circuit Breaking Capacity I_{cu}								
AC440V	kA	42	50	66	42	66	85	100
AC690V	kA	42	42	50	42	66	66	85
Service Short-Circuit Breaking Capacity I_{cs}	kA	$I_{cs} = I_{cu}$[1]						
Making Capacity I_{cm}								
AC440V	kA	88	105	145	88	145	187	220
AC690V	kA	88	88	105	88	145	145	187
Short-time withstand current I_{cw} (1s)	kA	42	42	50	42	66	66	85
Type		E4.2				E6.2		
Breaking Class		N	S	H	V	H	V	
Ultimate Short-Circuit Breaking Capacity I_{cu}								
AC440V	kA	66	85	100	150	100	150	
AC690V	kA	66	66	85	100	100	100	
Service Short-Circuit Breaking Capacity I_{cs}	kA	$I_{cs} = I_{cu}$[2]						
Making Capacity I_{cm}								
AC440V	kA	145	187	220	330	220	330	
AC690V	kA	145	145	187	220	220	220	
Short-time withstand current I_{cw} (1s)	kA	42	42	50	66	66	85	

Further ratings acc. manufacturer documentation.

[1] E1.2N I_{cs} = 50kA[AC440V]
[2] E4.2V I_{cs} = 125kA[AC440V]

Protection trip units:

Ekip DIP	Ekip Touch	Ekip Hi LCD	Ekip G Hi Touch
Ekip Hi Touch	Ekip LCD	Ekip G LCD	Ekip G Touch

Application/Limitation

Location Classes:
Temperature: B, Humidity: B, Vibration: A, EMC: A, Enclosure: IP20,

Suitable for use in an IT system with a capacity of 1.2 times the maximum trip current (max. 50kA)

ACB Trip relays: Communication port for monitoring purpose only.

Operating instruction of the manufacturer to be observed

Type Approval documentation

Tests carried out

IEC 60947-2 including Annex H, vibration test, dry heat test, damp heat test, cold test and EMC test.

Marking of product

Acc. IEC 60947-2 subclause 5.2

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