



Marine & Offshore

Certificate number: 20125/C0 BV

File number: ACE 02/010/20

Product code: 2633H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

*This certificate is issued to***ABB SpA - ABB Sace Division**

Frosinone - ITALY

*for the type of product***CIRCUIT BREAKERS (LOW VOLTAGE)**

Low voltage moulded-case circuit-breakers Tmax type T1, T2, T3, T4, T5, T6, T7

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships.

IEC 60947-1 (2007), IEC 60947-2 (2006).

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.***This certificate will expire on: 31 Mar 2025****For Bureau Veritas Marine & Offshore,**

At BV VENEZIA, on 31 Mar 2020,

Sandro BRUSEGAN



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 6 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Technical data of low voltage moulded case circuit-breakers Tmax type: T1, T2, T3, T4, T5, T6, T7.

- Rated insulation voltage, U_i : 1000V
- Rated impulse withstand voltage, U_{imp} : 8 kV
- Rated frequency : 50 - 60 Hz
- Poles : 3/4

Tmax T1

		B	C	N
Rated uninterrupted current, I_u (A)		160	160	160
Rated service voltage, U_e (AC) (V)		690	690	690
	(DC) (V)	500	500	500
Rated ultimate short-circuit breaking capacity, I_{cu}				
220/230 V AC	(kA)	25	40	50
380/415 V AC	(kA)	16	25	36
440 V AC	(kA)	10	15	22
500 V AC	(kA)	8	10	15
690 V AC	(kA)	3	4	6
Rated service short-circuit breaking capacity, I_{cs}				
220/230 V AC	(% I_{cu})	100%	75%	75%
380/415 V AC	(% I_{cu})	100%	100%	75%
440 V AC	(% I_{cu})	100%	75%	50%
500 V AC	(% I_{cu})	100%	75%	50%
690 V AC	(% I_{cu})	100%	75%	50%
Utilization category		A	A	A
Rated short-circuit making capacity, I_{cm}				
220/230 V AC	(kA)	52,5	84	105
380/415 V AC	(kA)	32	52,5	75,6
440 V AC	(kA)	17	30	46,2
500 V AC	(kA)	13,6	17	30
690 V AC	(kA)	4,3	5,9	9,2
Version		F	F	F

Tmax T2

		N	S	H	L
Rated uninterrupted current, I_u (A)		160	160	160	160
Rated service voltage, U_e (AC) (V)		690	690	690	690
	(DC) (V)	500	500	500	500
Rated ultimate short-circuit breaking capacity, I_{cu}					
220/230 V AC	(kA)	65	85	100	120
380/415 V AC	(kA)	36	50	70	85
440 V AC	(kA)	30	45	55	75
500 V AC	(kA)	25	30	36	50
690 V AC	(kA)	6	7	8	10
Rated service short-circuit breaking capacity, I_{cs}					
220/230 V AC	(% I_{cu})	100%	100%	100%	100%
380/415 V AC	(% I_{cu})	100%	100%	100%	75% (70 kA)
440 V AC	(% I_{cu})	100%	100%	100%	75%
500 V AC	(% I_{cu})	100%	100%	100%	75%
690 V AC	(% I_{cu})	100%	100%	100%	75%
Utilization category		A	A	A	A
Rated short-circuit making capacity, I_{cm}					
220/230 V AC	(kA)	143	187	220	264
380/415 V AC	(kA)	75,6	105	154	187
440 V AC	(kA)	63	94,5	121	165
500 V AC	(kA)	52,5	63	75,6	105
690 V AC	(kA)	9,2	11,9	13,6	17
Version		F-P	F-P	F-P	F-P

Tmax T3		
	N	S
Rated uninterrupted current , Iu (A)	250	250
Rated service voltage, Ue (AC) (V)	690	690
(DC) (V)	500	500
Rated ultimate short-circuit breaking capacity, Icu		
220/230 V AC (kA)	50	85
380/415 V AC (kA)	36	50
440 V AC (kA)	25	40
500 V AC (kA)	20	30
690 V AC (kA)	5	8
Rated service short-circuit breaking capacity, Ics		
220/230 V AC (%Icu)	75%	50%
380/415 V AC (%Icu)	75%	50% (27kA)
440 V AC (%Icu)	75%	50%
500 V AC (%Icu)	75%	50%
690 V AC (%Icu)	75%	50%
Utilization category	A	A
Rated short-circuit making capacity, Icm		
220/230 V AC (kA)	105	187
380/415 V AC (kA)	75,6	105
440 V AC (kA)	52,5	84
500 V AC (kA)	40	63
690 V AC (kA)	7,7	13,6
Version	F-P	F-P

Tmax T4					
	N	S	H	L	V
Rated uninterrupted current , Iu (A)	250/320	250/320	250/320	250/320	250/320
Rated service voltage, Ue (AC) (V)	690	690	690	690	690
(DC) (V)	750	750	750	750	750
Rated ultimate short-circuit breaking capacity, Icu					
220/230 V AC (kA)	70	85	100	200	200
380/415 V AC (kA)	36	50	70	120	200
440 V AC (kA)	30	40	65	100	180
500 V AC (kA)	25	30	50	85	150
690 V AC (kA)	20	25	40	70	80
Rated service short-circuit breaking capacity, Ics					
220/230 V AC (%Icu)	100%	100%	100%	100%	100%
380/415 V AC (%Icu)	100%	100%	100%	100%	100%
440 V AC (%Icu)	100%	100%	100%	100%	100%
500 V AC (%Icu)	100%	100%	100%	100%	100%
Utilization category	A	A	A	A	A
Rated short-circuit making capacity, Icm					
220/230 V AC (kA)	154	187	220	440	660
380/415 V AC (kA)	75,6	105	154	264	440
440 V AC (kA)	63	84	143	220	396
500 V AC (kA)	52,5	63	105	187	330
690 V AC (kA)	40	52,5	84	154	176
Version	F-P-W	F-P-W	F-P-W	F-P-W	F-P-W

Tmax T5						
	N	S	H	L	V	
Rated uninterrupted current, Iu (A)	400/630	400/630	400/630	400/630	400/630	400/630
Rated service voltage, Ue (AC) (V)	690	690	690	690	690	690
(DC) (V)	750	750	750	750	750	750
Rated ultimate short-circuit breaking capacity, Icu						
220/230 V AC (kA)	70	85	100	200	200	
380/415 V AC (kA)	36	50	70	120	200	
440 V AC (kA)	30	40	65	100	180	
500 V AC (kA)	25	30	50	85	150	
690 V AC (kA)	20	25	40	70	80	
Rated service short-circuit breaking capacity, Ics						
220/230 V AC (%Icu)	100%	100%	100%	100%	100%	100%
380/415 V AC (%Icu)	100%	100%	100%	100%	100%	100%
440 V AC (%Icu)	100%	100%	100%	100%	100%	100%
500 V AC (%Icu)	100%	100%	100%	100%	100%	100%
690 V AC (%Icu)	100%	100%	100%	100%	100%	100%
Utilization category *)	B(400A) -A(630A)	B(400A) -A(630A)	B(400A) -A(630A)	B(400A) -A(630A)	B(400A) -A(630A)	B(400A) -A(630A)
Rated short-circuit making capacity, Icm						
220/230 V AC (kA)	154	187	220	440	660	
380/415 V AC (kA)	75,6	105	154	264	440	
440 V AC (kA)	63	84	143	220	396	
500 V AC (kA)	52,5	63	106	187	330	
690 V AC (kA)	40	52,5	84	154	176	
Version	F-P-W	F-P-W	F-P-W	F-P-W	F-P-W	F-P-W

Tmax T6					
	N	S	H	L	
Rated current, Iu (A)	630/800/1000	630/800/1000	630/800/1000	630/800/1000	630/800/1000
Rated service voltage, Ue (AC) (V)	690	690	690	690	690
(DC) (V)	750	750	750	750	750
Rated ultimate short-circuit breaking capacity, Icu					
220/230 V AC (kA)	70	85	100	200	
380/415 V AC (kA)	36	50	70	100	
440 V AC (kA)	30	45	50	80	
500 V AC (kA)	25	35	50	65	
690 V AC (kA)	20	22	25	30	
Rated service short-circuit breaking capacity, Ics					
220/230 V AC (%Icu)	100%	100%	100%	75%	
380/415 V AC (%Icu)	100%	100%	100%	75%	
440 V AC (%Icu)	100%	100%	100%	75%	
500 V AC (%Icu)	100%	100%	100%	75%	
690 V AC (%Icu)	75%	75%	75%	75%	
Utilization category **)	B(630A-800A) -A(1000A)	B(630A-800A) -A(1000A)	B(630A-800A) -A(1000A)	B(630A-800A) -A(1000A)	B(630A-800A) -A(1000A)
Rated short-circuit making capacity, Icm					
220/230 V AC (kA)	154	187	220	440	
380/415 V AC (kA)	75,6	105	154	220	
440 V AC (kA)	63	94,5	105	176	
500 V AC (kA)	52,5	73,5	105	143	
690 V AC (kA)	40	46	52,5	63	
Version	F-W	F-W	F-W	F-W	F-W

Tmax T7				
	S	H	L	V (7)
Rated current, Iu (A)	800/1000/ 1250/1600	800/1000/ 1250/1600	800/1000/ 1250/1600	800/1000/ 1250/1600
Rated service voltage, Ue (AC) (V)	690	690	690	690
(DC) (V)	-	-	-	-
Rated ultimate short-circuit breaking capacity, Icu				
220/230 V AC (kA)	85	100	200	200
380/415 V AC (kA)	50	70	120	150
440 V AC (kA)	50	65	100	130
500 V AC (kA)	40	50	85	100
690 V AC (kA)	30	42	50	60
Rated service short-circuit breaking capacity, Ics				
220/230 V AC (%Icu)	100%	100%	100%	100%
380/415 V AC (%Icu)	100%	100%	100%	100%
440 V AC (%Icu)	100%	100%	100%	100%
500 V AC (%Icu)	100%	100%	75%	100%
690 V AC (%Icu)	100%	75%	75%	75%
Utilization category ***)	B	B	B	B
Rated short-circuit making capacity, Icm				
220/230 V AC (kA)	187	220	440	440
380/415 V AC (kA)	105	154	264	330
440 V AC (kA)	105	143	220	286
500 V AC (kA)	84	105	187	220
690 V AC (kA)	63	88,2	105	132
Version	F-W	F-W	F-W	F-W

*) I_{cw} = 5 kA,**) I_{cw} = 7,6 kA (630 A) - 10 kA (800 A),***) I_{cw} = 20 kA (S, H, L version) - 15 kA (V version).

F = Front,

P = Plug-in circuit-breakers,

W = Withdrawable circuit-breakers.

Trip units:	T1	T2	T3	T4	T5	T6	T7
Thermomagnetic:							
T adjustable, M fixed TMD	X	X	X	X(2)	-	-	-
T adjustable, M adjustable (5..10 x In) TMA	-	-	-	X(3)	X(4)	X(6)	-
T adjustable, M fixed (3..5 x In) TMG	-	X	X	-	-	-	-
T adjustable, M adjustable (2,5..5 x In) TMG	-	-	-	-	X(5)	-	-
Magnetic only	-	X(1)	X	X	-	-	-
Electronic:							
PR221DS		X	-	X	X	X	-
PR222DS	-	-	-	X	X	X	-
PR223DS	-	-	-	X	X	X	-
PR231/P		-	-	-	-	-	X
PR232/P	-	-	-	-	-	-	X
PR331/P	-	-	-	-	-	-	X
PR332/P	-	-	-	-	-	-	X

(1) - MF up to I_n 12,5 A,

(2) - up to 50 A,

(3) - up to 250 A,

(4) - up to 500 A,

(5) - up to 500 A,

(6) - up to 800 A (W version is not available on T6 1000 A),

(7) - only for T7 800/1000/1250 A.

2. DOCUMENTS AND DRAWINGS:

As per Manufacturer's technical catalogue N° 1SDC210015D0208, dated May 2016.

3. TEST REPORTS:

ABB SACE test reports Nos LBRP 8013/00 issued on 08.09.2008 and LBRP 7876/01 issued on 20.12.2007.
Intertek test reports Nos E 133S220765_25a, E 133S220765_25aR, E 133S220765_25b and E 133S220765_25bR issued on 28.06.2007.

CESI test report No A7027438 issued on 26.02.2008.

LOVAG Certificates of Conformity Nos: IT 07.001 to IT 07.014, IT 07.040 ; IT 07.062, IT 07.075 to IT 07.078, IT 08.009, IT 08.010, IT 08.018 to IT 08.020, IT 08.051 to IT 08.054, IT 08.074, IT 08.075, IT 08.078 and IT 08.079 including performance test reports.

INTERTEK: Test report N° 200025508UDI-EMC, dated 12 Mar 2020.

4. APPLICATION / LIMITATION:

4.1 - Approval also valid for ships to be granted with the notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**

4.2 - According to BV Rules for the Classification of Steel Ships and IEC 60947-2.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **ABB SpA - ABB Sace Division** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **ABB SpA - ABB Sace Division** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - For information, **ABB SpA - ABB Sace Division** has declared to Bureau Veritas the following production sites:

ABB SPA - ABB Sace DIVISION (Bergamo)

**Via Baioni 35
24123 BERGAMO
ITALY**

ABB XINHUI LOW VOLTAGE SWITCHGEAR CO., LTD.

Jinggzhou Industrial Development Zone

Xinhui District, Jiangmen City

Guangdong 529100

China

Xinhui

CHINA

6. MARKING OF PRODUCT:

According to IEC 60947-2 specifications.

7. OTHERS:

7.1 - It is **ABB SpA - ABB Sace Division's** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This Certificate supersedes the Type Approval Certificate No.20125/B0 BV issued on 04 Dec 2014 by the Society.

***** END OF CERTIFICATE *****