Marine & Offshore

Certificate number: 26671/C0 BV
File number: ACE 02/10/23
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 (Bergamo)

BERGAMO - ITALY

for the type of product

CIRCUIT BREAKERS (LOW VOLTAGE)

Tmax XT1, XT2, XT3, XT4, XT5, XT6, XT7 and XT7M

Requirements:
Bureau Veritas Rules for the Classification of Steel Ships.
IEC 60947-1 (2020), IEC 60947-2 (2016)

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: 27 Jun 2027

For Bureau Veritas Marine & Offshore,
At BV VENEZIA, on 27 Jun 2022,
Sandro BRUSEGAN

This certificate was created electronically and is valid without signature

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

- Product model or type designation:
  LV Circuit Breakers_ Tmax XT series

- Product description:
  Tmax XT is low voltage moulded-case circuit-breakers up to 1600A.
  XT1 and XT3 only equipped with thermal-magnetic release
  XT2, XT4 and XT5 are equipped with both Electronic and thermal-magnetic release.
  XT6, XT7 and XT7M are equipped with electronic release.

Rated insulation voltage **Ui** (V):	1000V
Rated impulse withstand voltage **Uimp** (kV):	8 kV
Rated current **Iu** (A) at 40°C (see application/limitation):	160-1600
Rated service voltage **Ue** (V):	690V
Rated frequency AC (Hz):	50-60 Hz

Tmax XT1					
	B	**C**	**N**	**S**	**H**
Rated ultimate short-circuit breaking capacity (kA) **Icu**					
230V AC (kA)	25	40	65	85	100
440V AC (kA)	15	25	36	50	65
690V AC (kA)	3	4	6	8	10
Rated service short-circuit breaking capacity **Ics**					
230V AC (kA)	100%	100%	75(50)%	75%	75%
440V AC (kA)	75%	50%	50%	50%	50%
690V AC (kA)	100%	100%	75%	50%	50%
Utilisation category	A	A	A	A	A
Rated short-circuit making capacity **Icm**					
230V AC (kA)	52.5	84	143	187	220
440V AC (kA)	30	52.5	75.6	105	143
690V AC (kA)	4.5	6	9	13.6	17

Tmax XT2					
	N	**S**	**H**	**L**	**V**
Rated ultimate short-circuit breaking capacity (kA) **Icu**					
230V AC (kA)	65	85	100	150	200
440V AC (kA)	36	50	65	100	150
690V AC (kA)	10	12	15	18	20
Rated service short-circuit breaking capacity **Ics**					
230V AC (kA)	100%	100%	100%	100%	100%
440V AC (kA)	100%	100%	100%	100%	100%
690V AC (kA)	100%	100%	100%	100%	75%
Utilisation category	A	A	A	A	A
Rated short-circuit making capacity **Icm**					
230V AC (kA)	143	187	220	330	440
440V AC (kA)	75.6	105	143	220	440
690V AC (kA)	17	24	30	36	40

Tmax XT3		
	N	**S**
Rated ultimate short-circuit breaking capacity (kA) **Icu**		
230V AC (kA)	50	85
440V AC (kA)	25	40
690V AC (kA)	5	8
Rated service short-circuit breaking capacity **Ics**		
230V AC (kA)	75%	50%
440V AC (kA)	75%	50%
690V AC (kA)	75%	50%
Utilisation category	A	A
Rated short-circuit making capacity **Icm**		
230V AC (kA)	105	187
440V AC (kA)	52.5	84
690V AC (kA)	8.5	13.6

Tmax XT4						
	N	**S**	**H**	**L**	**V**	X
Rated ultimate short-circuit breaking capacity (kA) **Icu**						
230V AC (kA)	65	85	100	150	200	200
440V AC (kA)	36	50	65	100	150	200
690V AC (kA)	10	12	15	20	50*	100
Rated service short-circuit breaking capacity **Ics**						
230V AC (kA)	100%	100%	100%	100%	100%	100%
440V AC (kA)	100%	100%	100%	100%	100%	100%
690V AC (kA)	100%	100%	100%	100%	100%**	100%**
Utilisation category	A	A	A	A	A	A
Rated short-circuit making capacity **Icm**						
230V AC (kA)	143	187	220	330	440	440
440V AC (kA)	75.6	105	143	220	330	440
690V AC (kA)	17	24	30	40	52.5	440

(*) for In<=32A, Icu=25kA/Ics=20kA

(**) Ics=100%, Icu up to 250A with EF, ES and rear terminals. Ics=25kA when any other terminals are used and In>200A

Tmax XT5						
	N	**S**	**H**	**L**	**V**	**X**
Rated ultimate short-circuit breaking capacity (kA) **Icu**						
230V AC (kA)	70	85	100	150	200	200
440V AC (kA)	36	50	65	100	180	200
690V AC (kA)	20	25	40	70	80	100
Rated service short-circuit breaking capacity **Ics**						
230V AC (kA)	100%	100%	100%	100%	100%	100%
440V AC (kA)	100%	100%	100%	100%	100%	100%
690V AC (kA)	100%	100%	100%(1)	100%(2)	100%(2)	100%(2)
Utilisation category	A/B(3)	A/B(3)	A/B(3)	A/B(3)	A/B(3)	A/B(3)

(1) Ics=75% In > 500A

(2) Ics=50% for In>500A

(3) Category B for In<=500A

Tmax XT6			
	N	**S**	**H**
Rated ultimate short-circuit breaking capacity (kA) **Icu**			
220/230/240V AC (kA)	70	85	100
380/400/415V AC (kA)	36	50	70
440V AC (kA)	30	45	50
500/525V AC (kA)	25	35	50
660/690V AC (kA)	20	22	25
Rated service short-circuit breaking capacity **Ics**			
220/230/240V AC (kA)	100%	100%	100%
380/400/415V AC (kA)	100%	100%	100%
440V AC (kA)	100%	100%	100%
500/525V AC (kA)	100%	100%	100%
660/690V AC (kA)	100%	100%	100%
Utilisation category	A/B(1)	A/B(1)	A/B(1)

(1) Category B for In<=1000A

Tmax XT7 and XT7M			
	S	**H**	**L**
Rated ultimate short-circuit breaking capacity (kA) **Icu**			
230V AC (kA)	85	100	200
440V AC (kA)	50	65	100
690V AC (kA)	30	42	50
Rated service short-circuit breaking capacity **Ics**			
230V AC (kA)	100%	100%	100%
440V AC (kA)	100%	100%	100%
690V AC (kA)	100%	100%	75%
Utilisation category	B	B	B

2. <u>DOCUMENTS AND DRAWINGS :</u>

Technical characteristics N° 1SDC210099D0205 annex to 1SDC210100D0205, dated Jul 2020.
Catalog N° 1SDC210100D0205, dated Jul 2020.
Specification N° 1SDL000282R1258, dated 18 May 2022.

3. <u>TEST REPORTS :</u>

According to the document filed in ACE 02/10/23.

INTERTEK

Test reports Ref. 200019647UDI-EMC and 200019647UDI-EMCa, dated 15 Feb 2018.
Test reports Ref. 200019647UDI-EMCb, 200019647UDI-EMCc and 200019647UDI-EMCd, dated 15 Feb 2018.
Test reports Ref. 200026776UDI-EMC, dated 09 Jul 2020.
Test reports Ref. 200029764UDI-EMC, dated 14 Jun 2021.

ABB

Test report Ref. LBRP 16918/00, Rev.0, dated 25 Jun 2018.
Test report Ref. LBRP 16918/01, Rev.0, dated 25 Jun 2018.
Test report Ref. LBRP 16917/00, Rev.0, dated 13 Sep 2018.
Test report Ref. LBRP 16917/01, Rev.0, dated 13 Sep 2018.
Test report Ref. LBRP 16568/00, Rev.0, dated 08 Jun 2018.
Test report Ref. LBRP 16569/00, Rev.0, dated 12 Jun 2018.
Test report Ref. LBRP 16920/00, Rev.0, dated 25 Jul 2018.
Test report Ref. LBRP 18334/00, Rev.0, dated 09 Sep 2019.
Test report Ref. LBRP 18335/00, Rev.0, dated 09 Sep 2019.
Test report Ref. LBRP 18336/00, Rev.0, dated 09 Sep 2019.
Test report Ref. LBRP 18337/00, Rev.0, dated 18 Oct 2019.
Test report Ref. LBRP 18338/00, Rev.0, dated 05 Nov 2019.
Test report Ref. LBRP 18338/01, Rev.0, dated 21 Nov 2019.
Test report Ref. LBRP 18339/00, Rev.0, dated 11 Nov 2019.
Test report Ref. LBRP 18339/01, Rev.0, dated 21 Nov 2019.
Test report Ref. LBRP 18340/00, Rev.0, dated 08 Nov 2019.
Test report Ref. LBRP 18340/01, Rev.0, dated 21 Nov 2019.
Test report Ref. LBRP 18341/00, Rev.0, dated 07 Nov 2019.
Test report Ref. LBRP 18341/01, Rev.0, dated 22 Nov 2019.
Test report Ref. LBRP 18342/00, Rev.0, dated 14 Nov 2019.
Test report Ref. LBRP 18343/00, Rev.0, dated 15 Nov 2019.
Test report Ref. LBRP 18344/00, Rev.0, dated 18 Nov 2019.
Test report Ref. LBRP 18355/00, Rev.0, dated 26 Nov 2019.
Test report Ref. LBRP 18749/00, Rev.0, dated 05 Feb 2021.
Test report Ref. LBRP 18750/00, Rev.0, dated 08 Feb 2021.
Test report Ref. LBRP 19307/00, Rev.0, dated 22 Sep 2020.

LOVAG

Test reports Ref. 1293 and 1294, dated 18 Apr 2018.

IECEE

CB scheme Ref. SE-90444, dated 12 Apr 2018.
Test report Ref. 1806441STO-001, dated 27 Mar 2018.
CB scheme Ref. SE-90445, dated 12 Apr 2018.
Test report Ref. 1806443STO-001, dated 27 Mar 2018.
CB scheme Ref. CN50672, dated 14 Jul 2020.
Test report Ref. 00901-CB2019CQC-087756, dated 28 May 2020.
CB scheme Ref. SE-102367, dated 16 Sep 2020.
Test report Ref. 2021273STO-001, dated 30 Jul 2020.
CB scheme Ref. CN52501, dated 18 Jan 2021.
Test report Ref. 00901-CB2020CQC-093415, dated 25 Dec 2020.

UL

Test report Ref. 19-4788844257-1-1-0-EMC, 19-4788844257-2-1-0-EMC and 19-4788844257-3-1-0-EMC**,** dated 29 Mar 2019.
Test report Ref. 19-4788844257-4-1-0-EMC and 19-4788844257-5-1-0-EMC, dated 29 Mar 2019.
Test report Ref. 19-4788923674-1-1-0-EMC, 19-4788923674-4-1-0-EMC and 19-4788923674-5-1-0-EMC, dated 29 Mar 2019.

4. APPLICATION / LIMITATION :

4.1 - According to BV Rules for the Classification of Steel Ships and IEC 60947 specifications.
4.2 - Approval also valid for ships to be granted with the notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
4.3 - Tripping datas are given for 40 °C.
For ship application thermal magnetic releases to be derated in accordance with following table:

XT1		XT2		XT3		XT4	
40°C	**45°C**	**40°C**	**45°C**	**40°C**	**45°C**	**40°C**	**45°C**
In max	In max	In max	In max	In max	In max	In max	In max
160	154	160	154	160	154	160	154
-	-	-	-	250	240	250	240

Electronic releases doesn't need any deration.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 - The above products are to be supplied by **ABB SPA - ABB Sace DIVISION (Bergamo)** 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 (Bergamo)** 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 (Bergamo)** has declared to Bureau Veritas the following production site:

ABB SpA - ABB Sace Division
Via Enrico Fermi, 14
03100 Frosinone
ITALY

6. MARKING OF PRODUCT :

According to IEC 60947 specifications.

7. OTHERS :

7.1 - It is **ABB SPA - ABB Sace DIVISION (Bergamo)** '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. 26671/B2 BV issued on 26 Jan 2021 by the Society.

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