



NAVAL SHIPS

TYPE APPROVAL CERTIFICATE

N. MIL-ELE135422CS



This is to certify that the product below is found to be in compliance with the applicable requirements of the RINA type approval system.

Description	Circuit Breakers
Type	EMAX 2 /ML Series Models: Emax E1.2B/ML, E1.2N/ML Emax E2.2N/ML, E2.2S/ML, E2.2H/ML Emax E4.2N/ML, E4.2H/ML, E4.2V/ML Emax E6.2H/ML, E6.2V/ML equipped with electronic protection releases type: Ekip DIP; Ekip LCD; Ekip Hi-LCD; Ekip G LCD; Ekip G Hi-LCD; Ekip Touch; Ekip Hi-Touch; Ekip G Touch; Ekip G Hi-Touch.
Applicant	ABB S.P.A. ABB SACE DIVISION Via Pescaria , 5 24123 Bergamo ITALY
Manufacturer	ABB S.P.A. ABB SACE DIVISION Via Enrico Fermi, 14 03100 Frosinone ITALY
Testing Standards	Rules for the Classification of Naval Ships, Pt. C, Ch. 2, Sec. 10

Issued in Genova on May 4, 2022

This certificate is valid until May 4, 2027

RINA Services S.p.A.
Luigi Benedetti



NAVAL SHIPS

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N. MIL-ELE135422CS



Product Description

Fixed / Withdrawable Circuit-breakers Emax E1.2 B/ ML and Emax E1.2 N/ ML

Technical Data

- Ambient air temperature: 45°C
- Rated frequency: 50/60 Hz
- Number of poles: 3, 4
- Rated operational voltage (Ue): 415, 440, 525, 690 Vac
- Rated current (In): 400A; 630A; 800A; 1000A; 1250A; 1600A (*)
- Utilization Category: B ; Uimp= 12kV; Ui= 1000V;
- Suitable for Isolation; Pollution degree 3; Overvoltage cat. IV
- Circuit breakers for use in IT Systems up to 690Vac

Rated short-circuit capacity:

Rated service short circuit breaking capacity (Ics) , Rated ultimate short circuit breaking capacity (Icu)
Rated short circuit making capacity (Icm) , Rated short-time withstand current (Icw)

Emax E1.2 B/ ML

Rated Uninterrupted Current (Iu): 800 - 1250 - 1600A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	42	42	88.2	42 (1s)
440	42	42	88.2	42 (1s)
525	42	42	88.2	42 (1s)
690	42	42	88.2	42 (1s)

Emax E1.2 N/ ML

Rated Uninterrupted Current (Iu): 800 - 1250 - 1600A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	50	66	145.2	50 (1s)
440	50	66	145.2	50 (1s)
525	50	50	105	50 (1s)
690	50	50	105	50 (1s)

Above listed C.B. models may be used in conjunction with the following electronic protection releases:

Ekip DIP; Ekip LCD; Ekip Hi-LCD; Ekip G LCD; Ekip G Hi-LCD;
Ekip Touch; Ekip Hi-Touch; Ekip G Touch; Ekip G Hi-Touch.



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Fixed / Withdrawable Circuit-breakers Emax E2.2 N/ML, Emax E2.2 S/ML and Emax E2.2 H/ML

Technical Data

- Ambient air temperature: 45°C
- Rated frequency: 50/60 Hz
- Number of poles: 3, 4
- Rated operational voltage (Ue): 415, 440, 525, 690 Vac
- Rated current (In): 400A, 630A, 800A; 1000A; 1250A; 1600A; 2000A; 2500A (*)
- Utilization Category: B ; Uimp= 12kV; Ui= 1000V;
- Suitable for Isolation; Pollution degree 3; Overvoltage cat. IV
- Circuit breakers for use in IT Systems up to 690Vac

Rated short-circuit capacity:

Rated service short circuit breaking capacity (Ics) , Rated ultimate short circuit breaking capacity (Icu)
Rated short circuit making capacity (Icm) , Rated short-time withstand current (Icw)

Emax E2.2 N/ ML

Rated Uninterrupted Current (Iu): 800 - 1250 - 1600 - 2000 - 2500A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	66	66	145,2	66(1s)
440	66	66	145,2	66(1s)
525	66	66	145,2	66(1s)
690	66	66	145,2	66(1s)

Emax E2.2 S/ ML

Rated Uninterrupted Current (Iu): 800 - 1250 - 1600 - 2000 -2500A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	85	85	187	66(1s)
440	85	85	187	66(1s)
525	66	66	145,2	66(1s)
690	66	66	145,2	66(1s)

Emax E2.2 H/ ML

Rated Uninterrupted Current (Iu): 800-1250-1600-2000-2500A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	100	100	220	85(1s)
440	100	100	220	85(1s)
525	85	85	187	85(1s)
690	85	85	187	85(1s)

Above listed C.B models may be used in conjunction with the following electronic protection releases :

Ekip DIP; Ekip LCD; Ekip Hi-LCD; Ekip G LCD; Ekip G Hi-LCD;
Ekip Touch; Ekip Hi-Touch; Ekip G Touch; Ekip G Hi-Touch.



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N. MIL-ELE135422CS



Fixed / Withdrawable Circuit-breakers Emax E4.2 N/ML, Emax E4.2 H/ML, Emax E4.2 V/ML

Technical Data

- Ambient air temperature: 45°C
- Rated frequency: 50/60 Hz
- Number of poles: 3, 4
- Rated operational voltage (Ue): 415, 440, 525, 690 Vac
- Rated current (In): 400A; 630A; 800A; 1000A; 1250A; 1600A; 2000A; 2500A; 3200A; 4000A (*)
- Utilization Category: B ; Uimp= 12kV; Ui= 1000V;
- Suitable for Isolation; Pollution degree 3; Overvoltage cat. IV
- Circuit breakers for use in IT Systems up to 690Vac

Rated short-circuit capacity:

Rated service short circuit breaking capacity (Ics) ,

Rated ultimate short circuit breaking capacity (Icu)

Rated short circuit making capacity (Icm) ,

Rated short-time withstand current (Icw)

Emax E4.2 N/ ML

Rated Uninterrupted Current (Iu): 3200 - 4000A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	66	66	145.2	66 (1s)
440	66	66	145.2	66 (1s)
525	66	66	145.2	66 (1s)
690	66	66	145.2	66 (1s)

Emax E4.2 H/ ML

Rated Uninterrupted Current (Iu): 3200 - 4000A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	100	100	220	85 (1s)
440	100	100	220	85 (1s)
525	85	85	187	85 (1s)
690	85	85	187	85 (1s)

Emax E4.2 V/ML

Rated Uninterrupted Current (Iu): 2000 – 2500 - 3200 - 4000A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	125	150	330	100 (1s)
440	125	150	330	100 (1s)
525	100	100	220	100 (1s)
690	100	100	220	100 (1s)

Above listed C.B. models may be used in conjunction with the following electronic protection releases :

Ekip DIP; Ekip LCD; Ekip Hi-LCD; Ekip G LCD; Ekip G Hi-LCD;
Ekip Touch; Ekip Hi-Touch; Ekip G Touch; Ekip G Hi-Touch.



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Fixed / Withdrawable Circuit-breakers Emax E6.2 H/ ML, Emax E6.2 V/ ML

Technical Data

- Ambient air temperature: 45°C ; Rated frequency: 50/60 Hz ; Number of poles: 3, 4
- Rated operational voltage (Ue): 415, 440, 525, 690 Vac
- Rated current (In): 400A; 630A; 800A; 1000A; 1250A; 1600A; 2000A; 2500A; 3200A; 4000A; 5000A; 6300A (*)
- Utilization Category: B ; Uimp= 12kV; Ui= 1000V;
- Suitable for Isolation; Pollution degree 3; Overvoltage cat. IV
- Circuit breakers for use in IT Systems up to 690Vac

Rated short-circuit capacity:

Rated service short circuit breaking capacity (Ics) , Rated ultimate short circuit breaking capacity (Icu)
Rated short circuit making capacity (Icm) , Rated short-time withstand current (Icw)

Emax E6.2 H/ ML

Rated Uninterrupted Current (Iu): 4000 - 5000 - 6300A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	100	100	220	100 (1s)
440	100	100	220	100 (1s)
525	100	100	220	100 (1s)
690	100	100	220	100 (1s)

Emax E6.2 V/ ML

Rated Uninterrupted Current (Iu): 4000 - 5000 - 6300A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)	Icw (kA)
415	150	150	330	100 (1s)
440	150	150	330	100 (1s)
525	130	130	286	100 (1s)
690	100	100	220	100 (1s)

Above listed C.B models may be used in conjunction with the following electronic protection releases :

Ekip DIP; Ekip LCD; Ekip Hi-LCD; Ekip G LCD; Ekip G Hi-LCD;
Ekip Touch; Ekip Hi-Touch; Ekip G Touch; Ekip G Hi-Touch.

Test Reports:

Intertek Certificate (E1.2) : SE 73737M1 (2014 /01/09)_ IEC 60947-2:2006 (4th Ed.) + amend. 1:2009

Intertek Report (E1.2): TR 1400101 (2013/12/19) _ IEC 60947-2:2006 (4th Ed.) + amend. 1:2009

ABB Report (E1.2): TR12542/00 rev. 0 (2013/04/16) _ Climatic ;

ABB Report (E1.2): TR12760/00 rev. 0 (2014/01/08) _ Vibration ;

ABB Report (E1.2): TR12764/00 rev. 0 (2013/11/08) _ Inclination ;

Intertek Certificate (E2.2) : SE 74930A1 (2014/01/09)_ IEC 60947-2:2006 (4th Ed.) + amend. 1:2009

Intertek Report (E2.2): TR 1400102 (2013/12/12) _ IEC 60947-2:2006 (4th Ed.) + amend. 1:2009

Intertek Report (E2.2B, E2.2N, E2.2S) n.1411096STO-001 (2014/12/03) _ IEC 60947-2:2006 (4th Ed.) + amend. I

ABB Report (E2.2): TR12543/00 rev. 0 (2013/09/16) _ Climatic ;

ABB Report (E2.2): TR12761/00 rev. 0 (2014/01/08) _ Vibration ;

ABB Report (E2.2): TR12765/00 rev. 0 (2013/11/08) _ Inclination ;

Intertek Certificate (E4.2) : SE-75086 (2014 /01/09)_ IEC 60947-2:2006 (4th Ed.) + amend. 1:2009

Intertek Report (E4.2): TR 1400103 (2013/12/13) _ IEC 60947-2:2006 (4th Ed.) + amend. 1:2009

ABB Report (E4.2): TR12544/00 rev. 0 (2013/02/04) _ Climatic ;

ABB Report (E4.2): TR12762/00 rev. 0 (2014/01/08) _ Vibration ;

ABB Report (E4.2): TR12766/00 rev. 0 (2014/01/31) _ Inclination ;



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Intertek Report (E4.2N, E4.2S, E4.2H) n.1411098STO-001 (2014/12/03) _ IEC 60947-2:2006 (4th Ed.) + amend. 2009
Intertek Certificate (E6.2) : SE-75087 (2014 /01/09)_ IEC 60947-2:2006 (4th Ed.) + amend. 1:2009
Intertek Report (E6.2) : TR 1400104 (2013/12/17) _ IEC 60947-2:2006 (4th Ed.) + amend. 1:2009
ABB Report (E6.2) : TR12545/00 rev. 0 (2014/01/08) _ Climatic ;
ABB Report (E6.2) : TR12763/00 rev. 0 (2014/01/08) _ Vibration ;
ABB Report (E6.2) : TR12767/00 rev. 0 (2014/02/19) _ Inclination ;
Intertek Report: 200009501 UDI-EMCf rev. 01 (2013/12/16) _ EKIP DIP _ EMC
Intertek Report: 200009501 UDI-EMCp rev.02 (2014/01/10) _ EKIP G Hi-Touch LSiG _ EMC
Intertek Report: 200009501 UDI-EMCb rev.02 (2014/01/10) _ EKIP Hi-LD _ EMC
Intertek Report: 200009501 UDI-EMCi rev.01 (2013/12/16) _ EKIP Touch LSiG _ EMC

Documents update : September 17, 2015

Intertek Certificate: SE-75086A2/M1 (13/02/2015) _ IEC 60947-2:2006 (4th Ed.) and A1:2009
Intertek Certificate: SE-75087A2 (20/02/2015)_ IEC 60947-2:2006 (4th Ed.) and A1:2009
Intertek Certificate: SE-75086A3/M1 (12/02/2015)_ IEC60947-2:2006 (4th Ed.) and A1:2009
Intertek Certificate: SE-73737A1/M1 (20/02/2015)_ IEC60947-2:2006 (4th Ed.) and A1:2009
Intertek Reports: 1411096STO-001 (2014/12/03); 1411098STO-001 (2014/12/03) ;
1400101 (2013/12/19) ; 1400102 (2013/12/12) ; 1400103 (2013/12/13) ; 1400104 (2013/12/17)

ABB datasheet : SACE Emax 2/ML - Low - voltage air circuit breakers for Naval applications n. 3AUA0000080942
Rev.A

Document update:

Intertek Report Number 200029764UDI-EMC dated June 14, 2021

Intertek Report Number 200026776UDI-EMC dated July 09, 2020

ABB Declaration of Conformity N.ISDL000282R1220 dated January 19, 2022

(*)

Rated current (In) is set by inserting a RATING PLUG into the front panel socket on the electronic protection release.
Rated current (In) cannot be higher than the rated uninterrupted current (Iu) of the circuit breaker.