



|                      |                              |
|----------------------|------------------------------|
| CERTIFICATE NUMBER   | 19-GE1908857-PDA             |
| EFFECTIVE DATE       | 15-Nov-2019                  |
| EXPIRY DATE          | 14-Nov-2024                  |
| ABS TECHNICAL OFFICE | Genoa Engineering Department |

## CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

### **ABB S.P.A. - ABB SACE DIVISION**

located at

**ACCOUNTING SERVICES, VIA L. LAMA, 33, SESTO S. GIOVANNI  
(MI), Italy, 20099**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

#### **Product Circuit Breaker**

**Model Emax 2 type E1.2, E2.2, E4.2 and E6.2 (IEC 60947-2 Version)**

This Product Design Assessment (PDA) Certificate remains valid until 14/Nov/2024 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

  
Giorgio Barbini, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

**REVIEWED**

Details of this review  
are as indicated in the  
ABS letter

**ABB**



1SDL000282R1026

To: ABS

Bergamo, October 11<sup>th</sup> 2019

Please find herewith the electrical performances of Air circuit breakers Emax2, according to IEC 60947-2 standard.

ABB S.p.A  
ABB SACE Division  
Product Certification and Standards  
Low Voltage Breakers

**ABB SpA**  
Sede Legale / Registered Office  
Via Vittor Pisani, 16  
20124 Milano - Italy  
[www.abb.it](http://www.abb.it)

Direzione e Uffici Amministrativi  
Headquarters and  
Accounting Offices  
20099 Sesto San Giovanni (MI) - Italy  
Via Luciano Lama, 33  
Tel. +39 02 2414.1

Capitale Sociale / Share Capital:  
€ 110.000.000 i.v. / fully paid up  
Partita IVA / VAT: IT 11988960156  
Codice Fiscale / Fiscal Code: 00736410150  
Registro delle Imprese di Milano /  
Official Company Book: 00736410150  
R.E.A. Milano: 1513225

**Electrification Products Division /  
ABB SACE Division**  
Bergamo  
Dalmine (BG)  
Frosinone  
Garbagnate Monastero (LC)  
Marostica (VI)  
San Martino in Strada (LO)  
Santa Palomba (Roma)  
Vittuone (MI)

| IEC<br>60947-2                   | E1.2  |      |       | E2.2 |       |       |      | E4.2  |       |      |      | E6.2 |      |      |
|----------------------------------|-------|------|-------|------|-------|-------|------|-------|-------|------|------|------|------|------|
|                                  | B     | C    | N     | B    | N     | S     | H    | N     | S     | H    | V    | H    | V    |      |
| <b>In</b> [A]                    | 400   | 400  | 400   | 400  | 400   | 400   | 400  | 400   | 400   | 400  | 400  | 400  | 400  |      |
|                                  | 630   | 630  | 630   | 630  | 630   | 630   | 630  | 630   | 630   | 630  | 630  | 630  | 630  |      |
|                                  | 800   | 800  | 800   | 800  | 800   | 800   | 800  | 800   | 800   | 800  | 800  | 800  | 800  |      |
|                                  | 1000  | 1000 | 1000  | 1000 | 1000  | 1000  | 1000 | 1000  | 1000  | 1000 | 1000 | 1000 | 1000 |      |
|                                  | 1200  | 1200 | 1200  | 1200 | 1200  | 1200  | 1200 | 1200  | 1200  | 1200 | 1200 | 1200 | 1200 |      |
|                                  | 1250  | 1250 | 1250  | 1250 | 1250  | 1250  | 1250 | 1250  | 1250  | 1250 | 1250 | 1250 | 1250 |      |
|                                  | 1600  | 1600 | 1600  | 1600 | 1600  | 1600  | 1600 | 1600  | 1600  | 1600 | 1600 | 1600 | 1600 |      |
|                                  |       |      |       |      | 2000  | 2000  | 2000 | 2000  | 2000  | 2000 | 2000 | 2000 | 2000 | 2000 |
|                                  |       |      |       |      |       | 2500  | 2500 | 2500  | 2500  | 2500 | 2500 | 2500 | 2500 | 2500 |
|                                  |       |      |       |      |       |       |      |       | 3200  | 3200 | 3200 | 3200 | 3200 | 3200 |
|                                  |       |      |       |      |       |       |      | 4000  | 4000  | 4000 | 4000 | 4000 | 4000 |      |
|                                  |       |      |       |      |       |       |      |       |       |      |      | 5000 | 5000 |      |
|                                  |       |      |       |      |       |       |      |       |       |      |      | 6300 | 6300 |      |
| Service voltage <b>Ue</b> V      | 690   |      |       |      |       |       |      |       |       |      |      |      |      |      |
| Insulation voltage <b>Ui</b> V   | 1000  |      |       |      |       |       |      |       |       |      |      |      |      |      |
| Impulse withstand <b>Uimp</b> kV | 12    |      |       |      |       |       |      |       |       |      |      |      |      |      |
| Frequency Hz                     | 50-60 |      |       |      |       |       |      |       |       |      |      |      |      |      |
| <b>Icu</b>                       |       |      |       |      |       |       |      |       |       |      |      |      |      |      |
| 400-415 V [kA]                   | 42    | 50   | 66    | 42   | 66    | 85    | 100  | 66    | 85    | 100  | 150  | 100  | 150  |      |
| 440 V [kA]                       | 42    | 50   | 66    | 42   | 66    | 85    | 100  | 66    | 85    | 100  | 150  | 100  | 150  |      |
| 500-525 V [kA]                   | 42    | 42   | 50    | 42   | 66    | 66    | 85   | 66    | 66    | 85   | 100  | 100  | 130  |      |
| 690 V [kA]                       | 42    | 42   | 50    | 42   | 66    | 66    | 85   | 66    | 66    | 85   | 100  | 100  | 100  |      |
| <b>Ics</b>                       |       |      |       |      |       |       |      |       |       |      |      |      |      |      |
| 400-415 V [kA]                   | 42    | 50   | 50    | 42   | 66    | 85    | 100  | 66    | 85    | 100  | 125  | 100  | 150  |      |
| 440 V [kA]                       | 42    | 50   | 50    | 42   | 66    | 85    | 100  | 66    | 85    | 100  | 125  | 100  | 150  |      |
| 500-525 V [kA]                   | 42    | 42   | 50    | 42   | 66    | 66    | 85   | 66    | 66    | 85   | 100  | 100  | 130  |      |
| 690 V [kA]                       | 42    | 42   | 50    | 42   | 66    | 66    | 85   | 66    | 66    | 85   | 100  | 100  | 100  |      |
| <b>Icw</b>                       |       |      |       |      |       |       |      |       |       |      |      |      |      |      |
| (1s) [kA]                        | 42    | 42   | 50    | 42   | 66    | 66    | 85   | 66    | 66    | 85   | 100  | 100  | 100  |      |
| <b>Icm (peak)</b>                |       |      |       |      |       |       |      |       |       |      |      |      |      |      |
| 400-415 V [kA]                   | 88,2  | 105  | 145,2 | 88,2 | 145,2 | 187   | 220  | 145,2 | 187   | 220  | 330  | 220  | 330  |      |
| 440 V [kA]                       | 88,2  | 105  | 145,2 | 88,2 | 145,2 | 187   | 220  | 145,2 | 187   | 220  | 330  | 220  | 330  |      |
| 500-525 V [kA]                   | 88,2  | 88,2 | 105   | 88,2 | 145,2 | 145,2 | 187  | 145,2 | 145,2 | 187  | 220  | 220  | 286  |      |
| 690 V [kA]                       | 88,2  | 88,2 | 105   | 88,2 | 145,2 | 145,2 | 187  | 145,2 | 145,2 | 187  | 220  | 220  | 220  |      |
| Utilization cat.                 | B     | B    | B     | B    | B     | B     | B    | B     | B     | B    | B    | B    | B    |      |