

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Circuit Breaker

with type designation(s)
S400M, S450M and S400P series

Issued to
ABB Switzerland Ltd. Low Voltage Products
Schaffhausen, SH, Switzerland

is found to comply with
DNV GL class programme DNVGL-CP-0396 – Type approval – Low-voltage switchgear and controlgear - rated voltage does not exceed 1000V AC or 1500V DC
DNV GL rules for classification – Ships and offshore units

Application :

Miniature Circuit Breakers. For onboard ships and offshore installations.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Type	Rated voltage (V)	Rated current (A)
S400M, S450M	240/415 V a.c., 254/440 V a.c.	0,5 ... 63 A
S400P series	240/415 V a.c., 277/480 V a.c.	2,0 ... 63 A

Issued at **Hamburg** on **2021-02-17**

for **DNV GL**

This Certificate is valid until **2026-02-16**.

DNV GL local station: **Augsburg**

Approval Engineer: **Thomas Hartmann**

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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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Job Id: **262.1-020980-2**
 Certificate No: **TAE0000026**
 Revision No: **1**

Product description

Miniature Circuit Breakers with the following type designations:

Series S400 for connecting on Smisline system and S450 for connecting on Top hat rail acc. to IEC 60715. Can be equipped with auxiliary contact HK4... and signal contact SK4..

Type S401M - single pole
 Type S402M - double pole
 Type S403M - three pole
 Type S401M -..NP - single pole + E
 Type S403M -..NP - three pole + E

E: Fully protected Neutral

Tripping characteristics:	C/K		
Rated operation voltage (AC)	277 (IT-net) & 254/440 V *		
Rated impulse voltage	4 kV		
Frequency	50/ 60 Hz		
Rated current	0.5 - 63 A		
Breaking capacity 415 V (Ics)	0.5 - 16 A: 15 kA	20 - 63 A: 7,5 kA	
Breaking capacity 415 V (Icu)	0.5 - 16 A: 25 kA	20 - 63 A: 15 kA	
Making capacity 415 V (Icm)	0.5 - 16 A: 52,5 kA	20 - 63 A: 30 kA	
Breaking capacity 440 V (Ics)	0.5 - 16 A: 6 kA	20 - 63 A: 3 kA	
Breaking capacity 440 V (Icu)	0.5 - 16 A: 15 kA	20 - 63 A: 6 kA	
Making capacity 440 V (Icm)	0.5 - 16 A: 30 kA	20 - 63 A: 9 kA	
Power factor	According to IEC 60947-1		

Type S401P - single pole
 Type S402P - double pole
 Type S403P - three pole
 Type S401P -..NP - single pole + E
 Type S403P -..NP - three pole + E

E: Fully protected Neutral

Tripping characteristics:	B/C/K			
Rated operation voltage (AC)	277 (IT-net) & 277/480 V *			
Rated impulse voltage	4 kV			
Frequency	50/ 60 Hz			
Rated current	2.0 - 63 A			
Breaking capacity 415 V (Ics)	2-16 A: 20 kA	20-40 A: 15 kA	50-63 A: 7.5 kA	
Breaking capacity 415 V (Icu)	2-16 A: 40 kA	20-40 A: 30 kA	50-63 A: 20 kA	
Making capacity 415 V (Icm)	2-16 A: 84 kA	20-40 A: 63 kA	50-63 A: 40 kA	
Breaking capacity 480 V (Ics)	2-16 A: 10 kA	20-40 A: 5 kA	50-63 A: 2.5 kA	
Breaking capacity 480 V (Icu)	2-16 A: 20 kA	20-40 A: 15 kA	50-63 A: 5 kA	
Making capacity 480 V (Icm)	2-16 A: 40 kA	20-40 A: 30 kA	50-63 A: 7.65 kA	
Power factor	According to IEC 60947-1			

Type S451M - single pole

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Type S452M - double pole
Type S453M - three pole
Type S453M-...NP - three pole + E

Tripping characteristics:	C/K		
Rated operation voltage (AC)	277 (IT-net) & 254/440 V *		
Rated impulse voltage	4 kV		
Frequency	50/ 60 Hz		
Rated current	0.5 - 63 A trip. char. C		
Breaking capacity 415 V (Ics)	0.5 - 16 A: 15 kA	20 - 63 A:	7,5 kA
Breaking capacity 415 V (Icu)	0.5 - 16 A: 25 kA	20 - 63 A:	15 kA
Making capacity 415 V (Icm)	0.5 - 16 A: 52,5 kA	20 - 63 A:	30 kA
Breaking capacity 440 V (Ics)	0.5 - 16 A: 6 kA	20 - 63 A:	3 kA
Breaking capacity 440 V (Icu)	0.5 - 16 A: 15 kA	20 - 63 A:	6 kA
Making capacity 440 V (Icm)	0.5 - 16 A: 30 kA	20 - 63 A:	9 kA
Power factor	According to IEC 60947-1		

* Suitable in a directly earthed 254/440 V system, see under application limitation.

Application/Limitation

With $U_{imp} = 4$ kV it can be used in a IT net up to 277 V. It can be used in directly earth systems up to 254/440 V for the series S400M/S450M or up to 277/480 V for series S400P.

Type Approval documentation

Technical data:
Catalogue [2CCC413003C0202](#)

Test reports:

ABB Vibration test report no.P 148E, issued 2006-07-20. ABB Damp heat test report no. P1490E issued 2006-07-20. IPH Institut "Prüffeld für elektrische Hochleistungstechnik" GmbH-Report Ref. No. 191122-CC2-1 (VDE File No 423200-4402-0015/191122 issued 2015-07-15); SGS IECCE CB scheme report no.BE-9535; SGS report no. 63114201-00

Tests carried out

Type tested according to IEC 60947-2:2006 (Fourth Edition) + A1: 2009 + A2: 2013 including Annex H and IEC 60947-5-1, Vibration test in according to IEC 60068-2-6 and CN 2.4. Damp heat test in accordance with IEC 60068-2-30.

Marking of product

ABB - Type designation

Certificate retention survey

The scope of the retention/renewal survey is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems/components/materials.

The main elements of the survey are:

- Inspection of factory samples, selected at random from the production line (where practicable).
- Review of production and inspection routines, including test records from product sample tests and control routines.
- Ensuring that systems/components/materials used comply with type approved documents and/or referenced system/component/material specifications.



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- Review of possible changes in design of systems/components/materials, software version and performance, and make sure that such changes do not affect the type approval given.
- Ensuring traceability between manufacturer's product type marking and the type approval certificate.
- Ensuring that type approved documentation is available.

Survey to be performed at least every second year.

END OF CERTIFICATE