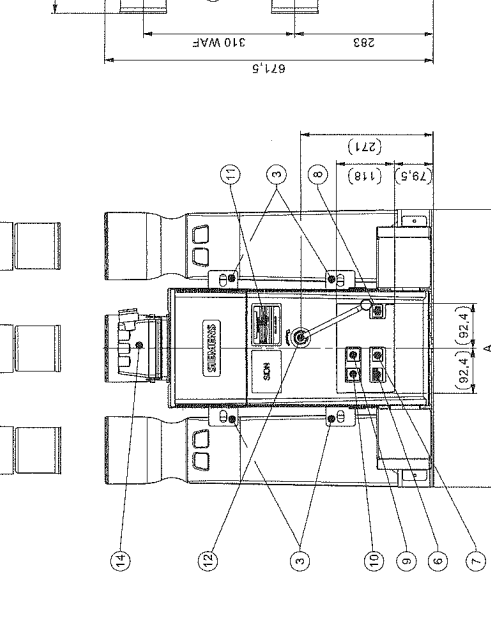
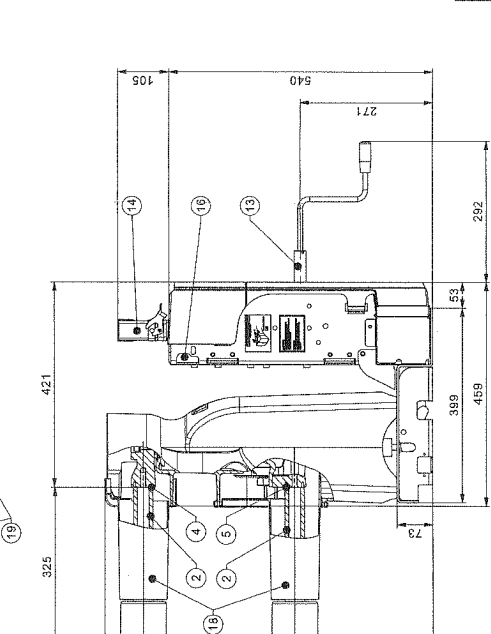
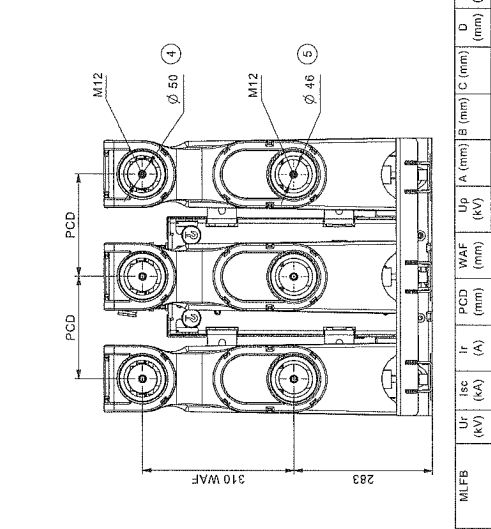
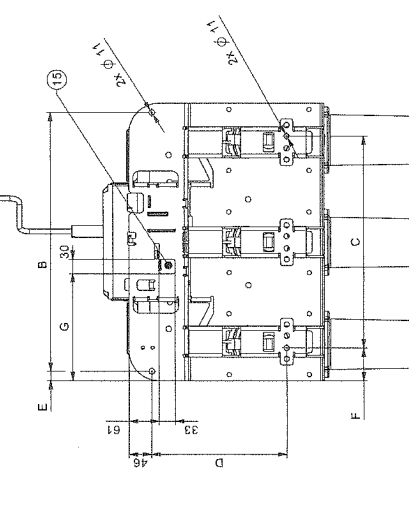
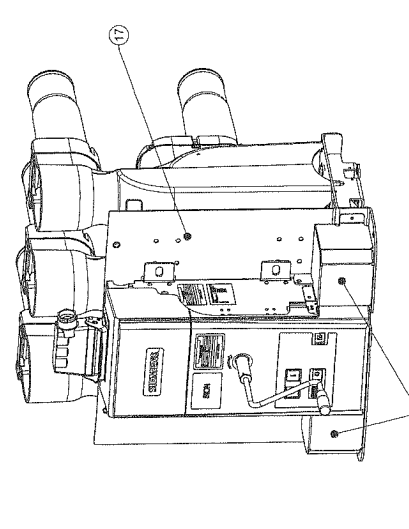
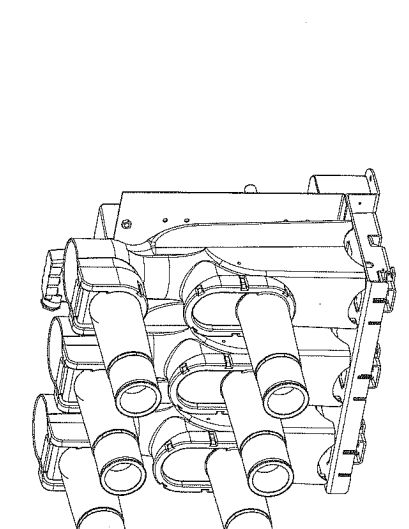


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MLFB	Ur (kV)	isc (kA)	Ir (A)	PCD (mm)	WAF (mm)	Up (kV)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Masse (kg)
3AE53 21-1	800		800	210	275		570	532	435		19	67,5	220	64
3AE53 51-1				275			665	635	325		30	185	282,5	67
3AE53 21-2	12,5		1250	210	275		570	532	435		19	67,5	220	64
3AE53 51-2				275			665	635	325		30	185	282,5	67
3AE53 21-3	1600		1600	210	275		570	532	435		19	67,5	220	69
3AE53 51-3				275			665	635	325		30	185	282,5	72
3AE53 22-1	800		800	275			695	665	325		19	67,5	220	64
3AE53 52-1				275			695	665	325		30	185	282,5	67
3AE53 22-2	16		1250	210	275		570	532	435		19	67,5	220	64
3AE53 52-2				275			665	635	325		30	185	282,5	67
3AE53 22-3	1600		1600	210	275		570	532	435		19	67,5	220	69
3AE53 52-3				275			665	635	325		30	185	282,5	72
3AE53 23-1	24		800	210	275	125	570	532	435	276	19	67,5	220	64
3AE53 53-1				275			665	635	325		30	185	282,5	67
3AE53 23-2	20		1250	210	275		570	532	435		19	67,5	220	64
3AE53 53-2				275			665	635	325		30	185	282,5	67
3AE53 23-3	1600		1600	210	275		570	532	435		19	67,5	220	69
3AE53 53-3				275			665	635	325		30	185	282,5	72
3AE53 24-1	800		800	210	275		570	532	435		19	67,5	220	64
3AE53 54-1				275			665	635	325		30	185	282,5	67
3AE53 24-2	25		1250	210	275		570	532	435		19	67,5	220	64
3AE53 54-2				275			665	635	325		30	185	282,5	67
3AE53 24-3	1600		1600	210	275		570	532	435		19	67,5	220	69
3AE53 54-3				275			665	635	325		30	185	282,5	72

Text zum Maßbild / Legend to drawing
IM.S.AZE.109.050000.001.B11 / Sheet 1:

- Erdungsschraube M12 /
- M12 earth-terminal screw
- Kontaktarme (auf Bestellung) /
- Contact arm (per order)
- Schalterbefestigung mit Laschen (auf Bestellung) /
- Breaker installation with fixing lugs (per order)
- Anschlußfläche, oben /
- Upper terminal areas
- Anschlußfläche, unten /
- Lower terminal areas
- Schaltplatinenhalter /
- Operation cycle counter
- Schaltplatinenhalter /
- Pushbutton "ON" /
- Druckknopf "EIN" /
- Pushbutton "ON" /
- Schaltplatinenhalter /
- Pushbutton "AUS" /
- Druckknopf "AUS" /
- Schaltplatinenhalter /
- Pushbutton "OFF" /
- Leistungsschild /
- Rating plate

12 Öffnung für aufsteckbare Handkurbel /
Opening for detachable hand crank

13 Handkurbel (auf Bestellung) /
Hand crank (per order)

14 24/64-polige Steckverbinder (Höhe 91/105 mm) einschließlich Türlingenhäuser mit seitlichem Kabalausgang /
24/64-pole connector (height 91/105 mm) including hood with side-entry

15 Öffnung für mechanische Abtrage und Vorrückelung /
Opening for mechanical scraping and latching

16 Öffnung für Kranhaken: 4x Leiste 20x40 /
Opening for crane hooks: 4x 20x40 slotted holes

17 IP-Platte (auf Bestellung) /
IP plate (per order)

18 Transmschale (auf Bestellung) /
Insulation shell (per order)

19 Wellenabdeckung (auf Bestellung) /
Shaft cover (per order)

Allgemeine Angaben / General data:

1. Bemessung der Stromschienen nach DIN 48 670/671 /
Dimensioning of busbars according to DIN 48 670/671
2. Geringe Abweichungen bei angelegten Maße zulässig /
Minor deviations from shown dimensions permitted

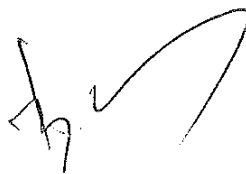
6-E-2018 / 09/04 / Looser/absh

SIEMENS

DATE 409.05000.001

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ДОКУМЕНТ 1.2



Prüffeld der Schaltwerke

Test Document

Report No.: 15-085-ME

Copy No.: 0

Contents: 20 Sheets

Test object: Three-pole air insulated withdrawable module with three-pole vacuum circuit-breaker
Designation: 3AX7111-5 with 3AE5324-2 with vacuum interrupters VSS12-1-31-A5
Rated voltage: 24 kV Rated normal current: 1250 A Rated frequency: 50 Hz
Rated short-circuit breaking current: 25 kA

Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Client: Siemens AG, EM MS R&D OC, Berlin
Testing station: Prüffeld der Schaltwerke, Berlin
Date of test: October 22 - 23, 2015

Applied test specifications:

IEC 62271-1, Edition 1.1, 2011-08
IEC 62271-100, Edition 2.1, 2012-09
IEC 62271-200, Edition 2.0, 2011-10

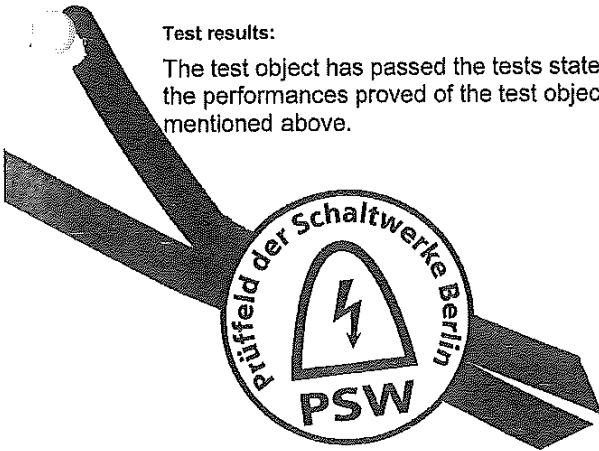
Tests performed:

Temperature-rise test with 1250 A at 50 Hz

Test results:

The test object has passed the tests stated above without any objection. The results obtained and the performances proved of the test object comply with the requirements of the specifications mentioned above.

На основании чл.36а ал.3 от ЗОП

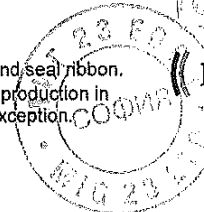
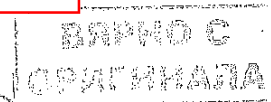


Berlin, February 08, 2016

The test results relate only to the items tested.

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200SE1512



DAkkS
Deutsche
Akkreditierungsstelle
D-PL-11055-10-01

000055

Notes

- The testing station of the Siemens switchgear factory (Prüffeld der Schaltwerke), Siemens AG, Berlin, has been approved by the DAkKS (German accreditation body) for rendering the following testing services:
 - mechanical tests,
 - temperature rise tests,
 - environment tests,
 - dielectric tests and
 - power tests (e.g. switching capacity, load switching, short-time current tests, etc.)
 on high-voltage switchgear and controlgear and on power engineering equipment.
 The approval was given under registration no. D-PL-11055-10. Testing services beyond the scope certified cannot be regarded as testing services of an approved testing station. No test documents will be made out for them.
- In the Prüffeld der Schaltwerke, Siemens AG, Berlin, all tests will be carried out according to EN ISO/IEC 17025 and the pertinent international and national test specifications. Moreover, all criteria specified by the accreditation authority will be taken into account in the tests.
- The Prüffeld der Schaltwerke, Siemens AG, Berlin, points out that its accreditation or its test documents do not imply that the accreditation authority or another authority have acknowledged the product tested.
- Test documents or parts thereof may not be used or released by the purchaser for advertising purposes if the accreditation authority considers their use as misleading. Reproduction in extracts of the test documents is acceptable only on condition of the prior consent of the Prüffeld der Schaltwerke, Siemens AG, Berlin. Copying the cover sheet and sheet 2 is an exception.
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- If reference is to be made in one way or other to the utilization of the Prüffeld der Schaltwerke, Siemens AG, Berlin, as approved testing laboratory, this shall be worded as follows:
 "Testing by the Testing Station of Siemens Schaltwerke Berlin, which is accredited by the DAkKS (German accreditation body) for tests on high-voltage switchgear and controlgear and power engineering equipment under registration No. D-PL-11055-10".
- The Prüffeld der Schaltwerke applies the internal procedure PSW-IA 020 for determining the uncertainties of measurement. As long as no explicit statements are made, the uncertainties required by the relevant standards have been complied with.
- The Prüffeld der Schaltwerke is an independent Test Laboratory in accordance with the standard EN ISO/IEC 17025. During testing and evaluation the head of the Laboratory and the personnel are released from orders of the upper management and accordingly there is no possibility for external influence of the Laboratory, whether commercial or otherwise.

Different type of documents

A Type Test Certificate...

is issued for type tests which have successfully been carried out in full compliance with the relevant specifications or standards valid at the time of the test. For these tests the equipment under test must be clearly identified by technical description, drawings and additional specifications.

A Test Document...

is issued for parts of type tests which have successfully been carried out in full compliance with the relevant specifications or standards valid at the time of test. For these tests the equipment under test must be clearly identified by technical description, drawings and additional specifications.

A Test Report...

is issued for all other tests which have been carried out according to specifications, standards and/or clients instructions. Similarly, this test report contains all test results, details of the conditions under which the tests were carried out, also details relating to the behaviour of the equipment during test, and its condition after the tests.

A Test Confirmation...

is issued immediately after the tests. It confirms that the tests have been conducted and is valid only until publishing the detailed results in an entire document.

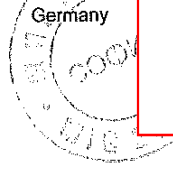
Addresses

Testing station: Prüffeld der Schaltwerke
Siemens AG
EM MS R&D OC TD
Nonnendammallee 104
13629 Berlin
Germany

Client: Siemens AG
EM MS R&D OC
Nonnendammallee 104
13629 Berlin
Germany

Manufacturer: Siemens AG
EM MS.O.SD
Nonnendamm
13629 Berlin
Germany

На основании чл.36а ал.3 от
ЗОП



Handwritten signature

Handwritten signature

Handwritten marks and numbers

Technical Data of Test Object Withdrawable Module

Test object: Three-pole air insulated withdrawable module
Designation: 3AX7111-5
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Serial No.: Withdrawable part and withdrawable cartridge: 3AE5R/00005721
Year of manufacture: 2015
Drawing No.: Drawings and part lists - see sheet 7

Ratings assigned by the manufacturer:

Rated voltage	24 kV
Rated normal current	1250 A
Rated frequency	50/60 Hz
Rated lightning impulse withstand voltage	125 kV
Rated switching impulse withstand voltage	- kV
Rated power-frequency withstand voltage	65 kV
Rated peak withstand current	65 kA
Rated short-time withstand current	25 kA
Rated duration of short-circuit	3 s
Insulating medium	air
Rated filling pressure for insulation	- MPa abs. at 20 °C
Minimum functional pressure for insulation	- MPa abs. at 20 °C

Further data:

Pole centre distance	210 mm
Width across flats	310 mm

Essential characteristics:

-



Technical Data of Test Object Circuit-Breaker

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5324-2 with vacuum interrupters VSS 12-1-31-A5
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Serial No.: S 3AE5/00005721
Year of manufacture: 2015
Drawing No.: Drawings and parts lists - see sheet 8 and 9

Ratings assigned by the manufacturer:

Rated voltage	24 kV
Rated normal current	1250 A
Rated frequency	50/60 Hz
Rated lightning impulse withstand voltage	125 kV
Rated switching impulse withstand voltage	- kV
Rated power-frequency withstand voltage	65 kV
Rated peak withstand current	65 kA
Rated short-time withstand current	25 kA
Rated duration of short-circuit	3 s
Rated short-circuit breaking current	25 kA
DC component of the rated short-circuit breaking current (Valid for a minimum opening time of XX ms, a relay-time of 10 ms and a time constant of 45 ms)	50 %
Rated short-circuit making current	65 kA
Rated transient recovery voltage	41.2 kV
Rate of rise of transient recovery voltage	0.47 kV/μs
First-pole-to-clear factor	1.5
Rated operating sequence	O - 0.3 s - CO - 15 s - CO
Arc extinguishing medium	Vacuum
Rated filling pressure for interruption	- MPa abs. at 20 °C
Minimum functional pressure for interruption	- MPa abs. at 20 °C
Insulating medium	Air
Rated filling pressure for insulation	- MPa abs. at 20 °C
Minimum functional pressure for insulation	- MPa abs. at 20 °C
Driving mechanism (type)	Spring, charged by motor
Number of poles	3
Number of units per pole	1
Rated opening time	< 60 ms
Rated closing time	< 60 ms
Rated supply voltage of opening device	110 V d.c.
Rated supply voltage of closing device	110 V d.c.
Rated supply voltage of auxiliary circuits	110 V d.c.
Rated frequency of supply voltage	- Hz
Rated line /cable-charging breaking current	10 / 31,5 A
Rated single capacitor bank breaking current	400 A
Classification of circuit-breaker	Class M2, E2, C2, S1

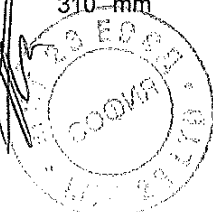
Further data:

Serial number of vacuum interrupter in pole L1 / L2 / L3 S000103 / S000195 / S000105
 Pole centre distance 210 mm
 Width across flats 310 mm

Essential characteristics:

-

**ВЯРНО С
ОРИГИНАЛА**



000058

Test Document

Report No.: 15-054-MS-1

Copy No.: 0

Contents: 114 Sheets

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5324-2 with vacuum interrupters VSS12-1-31-A5
Rated voltage: 24 kV Rated normal current: 1250 A Rated frequency: 50/60 Hz
Rated short-circuit breaking current: 25 kA
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Client: Siemens AG, EM MS R&D OC, Berlin
Testing station: Prüffeld der Schaltwerke, Berlin
Date of test: August 27 - 31, 2015
Applied test specifications:
IEC 62271-1, Edition 1.1, 2011-08
IEC 62271-100, Edition 2.1, 2012-09

Tests performed:

Short-circuit tests for a rated current of 25 kA at a rated voltage of 24 kV and a rated frequency of 50 Hz for class S1 in test-duties:

- T100s : 25.0 kA up to 25.1 kA at 25.6 kV up to 25.8 kV for breaking tests
65.6 kA up to 66.3 kA at 24.6 kV up to 24.7 kV for making tests
- T100a : 25.1 kA up to 25.5 kA at 25.6 kV up to 26.6 kV and up to 43% dc-component
- T60 : 15.2 kA up to 15.5 kA at 26.5 kV up to 26.6 kV
- T30 : 8.0 kA up to 8.1 kA at 25.6 kV up to 26.7 kV
- T10 : 2.4 kA at 26.7 kV up to 26.9 kV
- Single-phase fault test: 25.4 kA at 15.2 kV in pole L1
- Double-earth fault test: 22.1 kA at 24.2 kV in pole L1

Test results:

The test object has passed the above indicated tests without any objection. The proved performance and the results obtained comply with the requirements mentioned above.



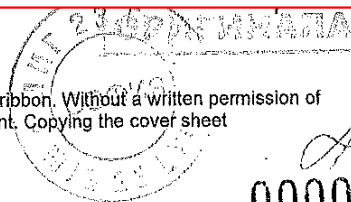
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На основании чл.36а ал.3 от ЗОП

Berlin, Oktober 05, 2015

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Documents and Addresses

Accreditation

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PSW-Documents

A Certificate

is issued for type tests which have successfully been carried out in full compliance with the relevant specifications or standards valid at the time of the test. For these tests the equipment under test must be clearly identified by technical description, drawings and additional specifications.

A Test Document

is issued for parts of type tests which have successfully been carried out in full compliance with the relevant specifications or standards valid at the time of test. For these tests the equipment under test must be clearly identified by technical description, drawings and additional specifications.

A Test Report

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A Test Confirmation

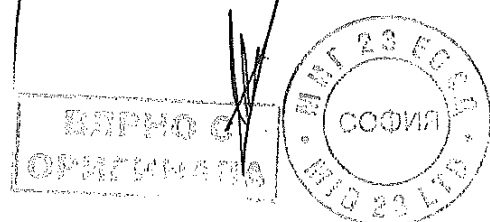
is issued immediately after the tests. It confirms that the tests have been conducted and is valid only until publishing the detailed results in an entire document.

Addresses

Testing Station: Prüffeld der Schaltwerke, Berlin
Siemens AG
EM MS R&D OC TD
Nonnendammallee 104
13629 Berlin
Germany

Manufacturer: Siemens AG
EM MS O SD BLN MF
Nonnendammallee 104
13629 Berlin
Germany

Client: Siemens AG
EM MS R&D OC
Nonnendammallee 104
13629 Berlin
Germany



**Technical Data of Test Object
Circuit-Breaker**

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5324-2 with vacuum interrupters VSS12-1-31-A5
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Serial No.: S 3AE5/00004949
Year of manufacture: 2015
Drawing No.: Drawings and parts lists - see sheet 6

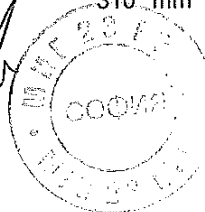
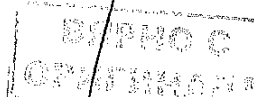
Ratings assigned by the manufacturer:

Rated voltage	24 kV
Rated normal current	1250 A
Rated frequency	50/60 Hz
Rated lightning impulse withstand voltage	125 kV
Rated switching impulse withstand voltage	- kV
Rated power-frequency withstand voltage	65 kV
Rated peak withstand current	65 kA
Rated short-time withstand current	25 kA
Rated duration of short-circuit	3 s
Rated short-circuit breaking current	25 kA
DC component of the rated short-circuit breaking current (Valid for a minimum opening time of 21 ms, a relay-time of 10 ms and a time constant of 45 ms)	50 %
Rated short-circuit making current	65 kA
Rated transient recovery voltage	41.2 kV
Rate of rise of transient recovery voltage	0.47 kV/μs
First-pole-to-clear factor	1.5
Rated operating sequence	O - 0.3 s - CO - 15 s - CO
Arc extinguishing medium	Vacuum
Rated filling pressure for interruption	- MPa abs. at 20 °C
Minimum functional pressure for interruption	- MPa abs. at 20 °C
Insulating medium	Air
Rated filling pressure for insulation	- MPa abs. at 20 °C
Minimum functional pressure for insulation	- MPa abs. at 20 °C
Driving mechanism (type)	Spring, charged by motor
Number of poles	3
Number of units per pole	1
Rated opening time	< 60 ms
Rated closing time	< 60 ms
Rated supply voltage of opening device	110 V d.c.
Rated supply voltage of closing device	110 V d.c.
Rated supply voltage of auxiliary circuits	110 V d.c.
Rated frequency of supply voltage	- Hz
Rated line /cable-charging breaking current	10 / 31.5 A
Rated single capacitor bank breaking current	400 A
Classification of circuit-breaker	Class M2, E2, C2, S1

Further data:

Serial number of vacuum interrupter in pole L1 / L2 / L3 S 990122 / S 000147 / S 000152
 Pole centre distance 210 mm
 Width across flats 310 mm

Essential characteristics:



Test Document

Report No.: 15-055-MS

Copy No.: 0

Contents: 46 Sheets

Test object: Three-pole vacuum circuit-breaker

Designation: 3AE5324-2 with vacuum interrupters VSS12-1-31-A5

Rated voltage: 24 kV

Rated normal current: 1250 A

Rated frequency: 50/60 Hz

Rated short-circuit breaking current: 25 kA

Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin

Client: Siemens AG, EM MS R&D OC, Berlin

Testing station: Prüffeld der Schaltwerke, Berlin

Date of test: August 18 - 20, 2015

Applied test specifications:

IEC 62271-1, Edition 1.1, 2011-08

IEC 62271-100, Edition 2.1, 2012-09

Tests performed:

Short-circuit tests for a rated current of 25 kA at a rated voltage of 24 kV and a rated frequency of 50 Hz in test-duty:

STC: Short-time withstand current: 25 kA - 3 s; peak withstand current: 65 kA

Test results:

The test object has passed the above indicated tests without any objection. The proved performance and the results obtained comply with the requirements mentioned above.



На основании чл.36а ал.3 от
ЗОП

Berlin, October 05, 2015

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000062

Documents and Addresses

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A Test Document

is issued for parts of type tests which have successfully been carried out in full compliance with the relevant specifications or standards valid at the time of test. For these tests the equipment under test must be clearly identified by technical description, drawings and additional specifications.

A Test Report

is issued for all other tests which have been carried out according to specifications, standards and/or clients instructions. Similarly, this test report contains all test results, details of the conditions under which the tests were carried out, also details relating to the behaviour of the equipment during test, and its condition after the tests.

A Test Confirmation

is issued immediately after the tests. It confirms that the tests have been conducted and is valid only until publishing the detailed results in an entire document.

Addresses

Testing Station: Prüffeld der Schaltwerke, Berlin
Siemens AG
EM MS R&D OC TD
Nonnendammallee 104
13629 Berlin
Germany

Manufacturer: Siemens AG
EM MS O SD BLN MF
Nonnendammallee 104
13629 Berlin
Germany

Client: Siemens AG
EM MS R&D OC
Nonnendammallee 104
13629 Berlin
Germany

Handwritten signatures and official stamps, including a circular stamp with 'EM MS R&D OC TD' and 'COOPRA' text.

Technical Data of Test Object
Circuit-Breaker

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5324-2 with vacuum interrupters VSS12-1-31-A5
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Serial No.: S 3AE5/00004949
Year of manufacture: 2015
Drawing No.: Drawings and parts lists - see sheet 6

Ratings assigned by the manufacturer:

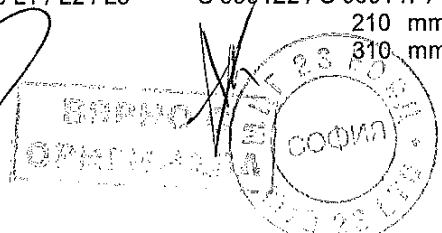
Rated voltage	24 kV
Rated normal current	1250 A
Rated frequency	50/60 Hz
Rated lightning impulse withstand voltage	125 kV
Rated switching impulse withstand voltage	- kV
Rated power-frequency withstand voltage	65 kV
Rated peak withstand current	65 kA
Rated short-time withstand current	25 kA
Rated duration of short-circuit	3 s
Rated short-circuit breaking current	25 kA
DC component of the rated short-circuit breaking current	50 %
<small>(Valid for a minimum opening time of 21 ms, a relay-time of 10 ms and a time constant of 45 ms)</small>	
Rated short-circuit making current	65 kA
Rated transient recovery voltage	41.2 kV
Rate of rise of transient recovery voltage	0.47 kV/µs
First-pole-to-clear factor	1.5
Rated operating sequence	O - 0.3 s - CO - 15 s - CO
Arc extinguishing medium	Vacuum
Rated filling pressure for interruption	- MPa abs. at 20 °C
Minimum functional pressure for interruption	- MPa abs. at 20 °C
Insulating medium	Air
Rated filling pressure for insulation	- MPa abs. at 20 °C
Minimum functional pressure for insulation	- MPa abs. at 20 °C
Driving mechanism (type)	Spring, charged by motor
Number of poles	3
Number of units per pole	1
Rated opening time	< 60 ms
Rated closing time	< 60 ms
Rated supply voltage of opening device	110 V d.c.
Rated supply voltage of closing device	110 V d.c.
Rated supply voltage of auxiliary circuits	110 V d.c.
Rated frequency of supply voltage	- Hz
Rated line /cable-charging breaking current	10 / 31.5 A
Rated single capacitor bank breaking current	400 A
Classification of circuit-breaker	Class M2, E2, C2, S1

Further data:

Serial number of vacuum interrupter in pole L1 / L2 / L3 S 990122 / S 000147 / S 000152
 Pole centre distance 210 mm
 Width across flats 310 mm

Essential characteristics:

-



000064

Test Document

Report No.: 15-070-MH

Copy No.: 0

Contents: 19 Sheets

Test object: Three-pole vacuum circuit-breaker

Designation: 3AE5324-2 with vacuum interrupters VSS12-1-31-A5
Rated voltage: 24 kV Rated normal current: 1250 A
Rated short-circuit breaking current: 25 kA

Rated frequency: 50/60 Hz

Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin

Client: Siemens AG, EM MS R&D OC, Berlin

Testing station: Prüffeld der Schaltwerke, Berlin

Date of test: August 19, 2015

Applied test specifications:

IEC 62271-1, Edition 1.1, 2011-08

DIN EN 62271-1/A1 (VDE 0671-1/A1), 2012-04

IEC 62271-100, Edition 2.1, 2012-09

DIN EN 62271-100 (VDE 0671-100), 2013-08

Tests performed:

Dielectric tests, including:

Lightning impulse withstand voltage: 125 kV

Short-duration power-frequency withstand voltage: 50 kV

Test results:

The test object has passed the above indicated tests without any objection. The proved performance and the results obtained comply with the requirements mentioned above.



На основании чл.36а ал.3 от ЗОП

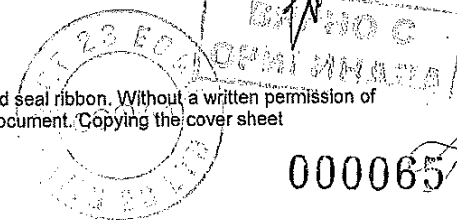
Head of High

Berlin, October 08, 2015
Rev.: June 29, 2016

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PSW-Documents

A Certificate

is issued for type tests which have successfully been carried out in full compliance with the relevant specifications or standards valid at the time of the test. For these tests the equipment under test must be clearly identified by technical description, drawings and additional specifications.

A Test Document

is issued for parts of type tests which have successfully been carried out in full compliance with the relevant specifications or standards valid at the time of test. For these tests the equipment under test must be clearly identified by technical description, drawings and additional specifications.

A Test Report

is issued for all other tests which have been carried out according to specifications, standards and/or clients instructions. Similarly, this test report contains all test results, details of the conditions under which the tests were carried out, also details relating to the behaviour of the equipment during test, and its condition after the tests.

A Test Confirmation

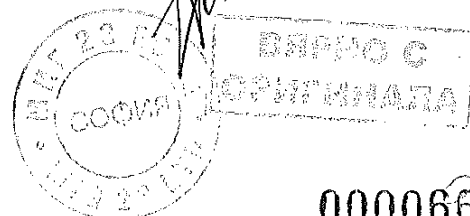
is issued immediately after the tests. It confirms that the tests have been conducted and is valid only until publishing the detailed results in an entire document.

Addresses

Testing Station: Prüffeld der Schaltwerke, Berlin
Siemens AG
EM MS R&D OC TD
Nonnendammallee 104
13629 Berlin
Germany

Manufacturer: Siemens AG
EM MS O SD BLN MF
Nonnendammallee 104
13629 Berlin
Germany

Client: Siemens AG
EM MS R&D OC
Nonnendammallee 104
13629 Berlin
Germany



Technical Data of Test Object
Circuit-Breaker

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5324-2 with vacuum interrupters VSS12-1-31-A5
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Serial No.: S3AE5/00004953
Year of manufacture: 2015
Drawing No.: Drawings and parts lists - see sheet 6

Ratings assigned by the manufacturer:

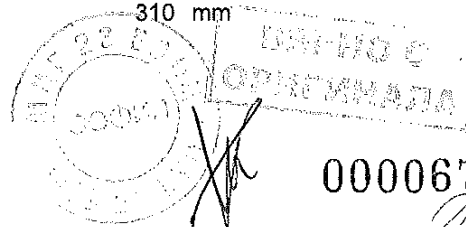
Rated voltage	24 kV
Rated normal current	1250 A
Rated frequency	50/60 Hz
Rated lightning impulse withstand voltage	125 kV
Rated switching impulse withstand voltage	- kV
Rated power-frequency withstand voltage	50 kV
Rated peak withstand current	65 kA
Rated short-time withstand current	25 kA
Rated duration of short-circuit	3 s
Rated short-circuit breaking current	25 kA
DC component of the rated short-circuit breaking current	50 %
<small>(Valid for a minimum opening time of 21 ms, a relay-time of 10 ms and a time constant of 45 ms)</small>	
Rated short-circuit making current	65 kA
Rated transient recovery voltage	41.2 kV
Rate of rise of transient recovery voltage	0.47 kV/µs
First-pole-to-clear factor	1.5
Rated operating sequence	O - 0.3 s - CO - 15 min - CO
Arc extinguishing medium	Vacuum
Rated filling pressure for interruption	- MPa abs. at 20 °C
Minimum functional pressure for interruption	- MPa abs. at 20 °C
Insulating medium	Air
Rated filling pressure for insulation	- MPa abs. at 20 °C
Minimum functional pressure for insulation	- MPa abs. at 20 °C
Driving mechanism (type)	Spring, charged by motor
Number of poles	3
Number of units per pole	1
Rated opening time	< 60 ms
Rated closing time	< 60 ms
Rated supply voltage of opening device	110 V d.c.
Rated supply voltage of closing device	110 V d.c.
Rated supply voltage of auxiliary circuits	110 V d.c.
Rated frequency of supply voltage	- Hz
Rated line /cable-charging breaking current	10/ 31.5 A
Rated single capacitor bank breaking current	400 A
Classification of circuit-breaker	Class M2, E2, C2, S1

Further data:

Serial number of vacuum interrupter in pole L1 / L2 / L3 S000132 / S000151 / S990114
 Pole centre distance 210 mm
 Width across flats 310 mm

Essential characteristics:

-



Test Document

Report No.: 15-072-MM

Copy No.: 0

Contents: 19 Sheets

Test object: Three-pole vacuum circuit-breaker

Designation: 3AE5354-2 with vacuum interrupters VSS12-1-31-A5

Rated voltage: 24 kV

Rated normal current: 1250 A

Rated frequency: 50/60 Hz

Rated short-circuit breaking current: 25 kA

Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin

Client: Siemens AG, EM MS R&D OC, Berlin

Testing station: Prüffeld der Schaltwerke, Berlin

Date of test: August 18 - September 11, 2015

Applied test specifications:

IEC 62271-1, Edition 1.1, 2011-08

DIN EN 62271-1/A1 (VDE 0671-1/A1), 2012-04

IEC 62271-100, Edition 2.1, 2012-09

DIN EN 62271-100 (VDE 0671-100), 2013-08

IEC 60068-2-1, Edition 6.0, 2007-03

DIN EN 60068-2-1 (VDE 0468-2-1), 2008-01

IEC 60068-2-2, Edition 5.0, 2007-07

DIN EN 60068-2-2 (VDE 0468-2-2), 2008-01

Tests performed:

- Low and high temperature Test (-25°C/+40°C)
- Voltage Test as a Condition Check

Test results:

The test object has passed the above indicated tests without any objection. The proved performance and the results obtained comply with the requirements mentioned above.



На основании чл.36а ал.3 от ЗОП

Berlin, October 09, 2015

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000068

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PSW-Documents

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A Test Document

is issued for parts of type tests which have successfully been carried out in full compliance with the relevant specifications or standards valid at the time of test. For these tests the equipment under test must be clearly identified by technical description, drawings and additional specifications.

A Test Report

is issued for all other tests which have been carried out according to specifications, standards and/or clients instructions. Similarly, this test report contains all test results, details of the conditions under which the tests were carried out, also details relating to the behaviour of the equipment during test, and its condition after the tests.

A Test Confirmation

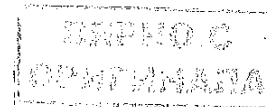
is issued immediately after the tests. It confirms that the tests have been conducted and is valid only until publishing the detailed results in an entire document.

Addresses

Testing Station: Prüffeld der Schaltwerke, Berlin
Siemens AG
EM MS R&D OC TD
Nonnendammallee 104
13629 Berlin
Germany

Manufacturer: Siemens AG
EM MS O SD BLN MF
Nonnendammallee 104
13629 Berlin
Germany

Client: Siemens AG
EM MS R&D OC
Nonnendammallee 104
13629 Berlin
Germany



000069

**Technical Data of Test Object
Circuit-Breaker**

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5354-2 with vacuum interrupters VSS12-1-31-A5
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Serial No.: S3AE5/00004954
Year of manufacture: 2015
Drawing No.: Drawings and parts lists - see sheet 6

Ratings assigned by the manufacturer:

Rated voltage	24 kV
Rated normal current	1250 A
Rated frequency	50/60 Hz
Rated lightning impulse withstand voltage	125 kV
Rated switching impulse withstand voltage	- kV
Rated power-frequency withstand voltage	50 kV
Rated peak withstand current	63/65 kA
Rated short-time withstand current	25 kA
Rated duration of short-circuit	3 s
Rated short-circuit breaking current	25 kA
DC component of the rated short-circuit breaking current	50 %
<small>(Valid for a minimum opening time of 21 ms, a relay-time of 10 ms and a time constant of 45 ms)</small>	
Rated short-circuit making current	63/65 kA
Rated transient recovery voltage	41.2 kV
Rate of rise of transient recovery voltage	0.47 kV/µs
First-pole-to-clear factor	1.5
Rated operating sequence	O - 0.3s - CO - 15s - CO
Arc extinguishing medium	Vacuum
Rated filling pressure for interruption	- MPa abs. at 20 °C
Minimum functional pressure for interruption	- MPa abs. at 20 °C
Insulating medium	Air
Rated filling pressure for insulation	- MPa abs. at 20 °C
Minimum functional pressure for insulation	- MPa abs. at 20 °C
Driving mechanism (type)	Spring, charged by motor
Number of poles	3
Number of units per pole	1
Rated opening time	< 60 ms
Rated closing time	< 60 ms
Rated supply voltage of opening device	110 V d.c.
Rated supply voltage of closing device	110 V d.c.
Rated supply voltage of auxiliary circuits	110 V d.c.
Rated frequency of supply voltage	- Hz
Rated line /cable-charging breaking current	- / 31.5 A
Rated single capacitor bank breaking current	400 A
Classification of circuit-breaker	Class M2, E2, C2, S1

Further data:

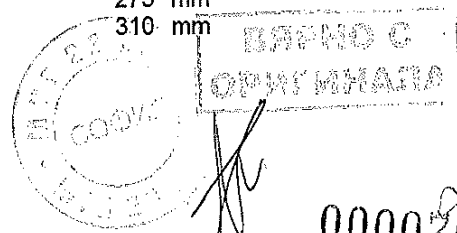
Serial number of vacuum interrupter in pole L1 / L2 / L3
 Pole centre distance
 Width across flats

S 000155 / S 000109 / S 000106

275 mm
 310 mm

Essential characteristics:

-



Handwritten signature

Handwritten signature
 000070

Handwritten mark

Test Document

Report No.: 15-073-MM

Copy No.: 0

Contents: 24 Sheets

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5354-2 with vacuum interrupters VSS12-1-31-A5
Rated voltage: 24 kV Rated normal current: 1250 A Rated frequency: 50/60 Hz
Rated short-circuit breaking current: 25 kA
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Client: Siemens AG, EM MS R&D OC, Berlin
Testing station: Prüffeld der Schaltwerke, Berlin
Date of test: August 26 - September 11, 2015

Applied test specifications:

IEC 62271-1, Edition 1.1, 2011-08

DIN EN 62271-1/A1 (VDE 0671-1/A1), 2012-04

IEC 62271-100, Edition 2.1, 2012-09

DIN EN 62271-100 (VDE 0671-100), 2013-08

Tests performed:

- Extended mechanical endurance test (M2, 10 000 operation cycles)
- Voltage Test as a Condition Check

Test results:

The test object has passed the above indicated tests without any objection. The proved performance and the results obtained comply with the requirements mentioned above.



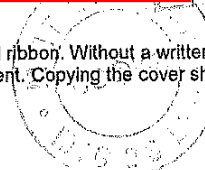
На основании чл.36а ал.3 от
ЗОП

Berlin, October 09, 2015

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ВЕРНО С
ПРИМЕРНО

000071

Documents and Addresses

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A Test Document

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A Test Report

is issued for all other tests which have been carried out according to specifications, standards and/or clients instructions. Similarly, this test report contains all test results, details of the conditions under which the tests were carried out, also details relating to the behaviour of the equipment during test, and its condition after the tests.

A Test Confirmation

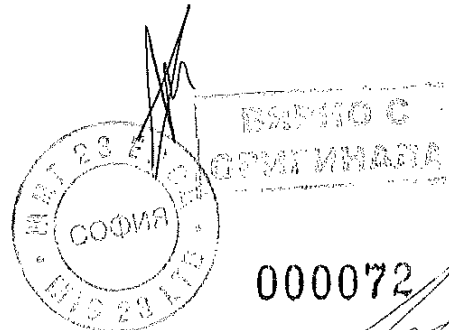
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Addresses

Testing Station: Prüffeld der Schaltwerke, Berlin
Siemens AG
EM MS R&D OC TD
Nonnendammallee 104
13629 Berlin
Germany

Manufacturer: Siemens AG
EM MS O SD BLN MF
Nonnendammallee 104
13629 Berlin
Germany

Client: Siemens AG
EM MS R&D OC
Nonnendammallee 104
13629 Berlin
Germany



Technical Data of Test Object Circuit-Breaker

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5354-2 with vacuum interrupters VSS12-1-31-A5
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Serial No.: S3AE5/00004954
Year of manufacture: 2015
Drawing No.: Drawings and parts lists - see sheet 6

Ratings assigned by the manufacturer:

Rated voltage	24 kV
Rated normal current	1250 A
Rated frequency	50/60 Hz
Rated lightning impulse withstand voltage	125 kV
Rated switching impulse withstand voltage	- kV
Rated power-frequency withstand voltage	50 kV
Rated peak withstand current	63/65 kA
Rated short-time withstand current	25 kA
Rated duration of short-circuit	3 s
Rated short-circuit breaking current	25 kA
DC component of the rated short-circuit breaking current (Valid for a minimum opening time of 21 ms, a relay-time of 10 ms and a time constant of 45 ms)	50 %
Rated short-circuit making current	63/65 kA
Rated transient recovery voltage	41.2 kV
Rate of rise of transient recovery voltage	0.47 kV/μs
First-pole-to-clear factor	1.5
Rated operating sequence	O - 0.3s - CO - 15s - CO
Arc extinguishing medium	Vacuum
Rated filling pressure for interruption	- MPa abs. at 20 °C
Minimum functional pressure for interruption	- MPa abs. at 20 °C
Insulating medium	Air
Rated filling pressure for insulation	- MPa abs. at 20 °C
Minimum functional pressure for insulation	- MPa abs. at 20 °C
Driving mechanism (type)	Spring, charged by motor
Number of poles	3
Number of units per pole	1
Rated opening time	< 60 ms
Rated closing time	< 60 ms
Rated supply voltage of opening device	110 V d.c.
Rated supply voltage of closing device	110 V d.c.
Rated supply voltage of auxiliary circuits	110 V d.c.
Rated frequency of supply voltage	- Hz
Rated line /cable-charging breaking current	- / 31.5 A
Rated single capacitor bank breaking current	400 A
Classification of circuit-breaker	Class M2, E2, C2, S1

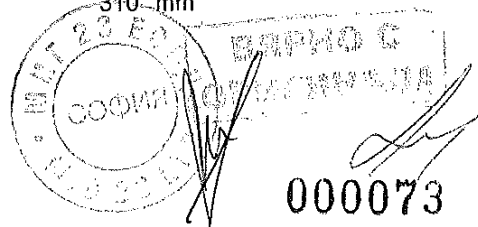
Further data:

Serial number of vacuum interrupter in pole L1 / L2 / L3
 Pole centre distance
 Width across flats

S 000155 / S 000109 / S 000106
 275 mm
 310 mm

Essential characteristics:

-



Test Document

Report No.: 15-075-ME

Copy No.: 0

Contents: 18 Sheets

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5324-2 with vacuum interrupters VSA 12-1-31 A5
Rated voltage: 24 kV Rated normal current: 1250 A Rated frequency: 50/60 Hz
Rated short-circuit breaking current: 25 kA
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Client: Siemens AG, EM MS R&D OC 4 2, Berlin
Testing station: Prüffeld der Schaltwerke, Berlin
Date of test: August 26th - September 01th, 2015

Applied test specifications:

IEC 62271-1, Edition 1.1, 2011-08

DIN EN 62271-1/A1 (VDE 0671-1/A1), 2012-04

IEC 62271-100, Edition 2.1, 2012-09

DIN EN 62271-100 (VDE 0671-100), 2013-08

Tests performed:

Temperature-rise test with 1250 A at 50 Hz
(Terminal connection: copper bar, painted, 60mm x 10mm)

Test results:

The test object has passed the above indicated tests without any objection. The proved performance and the results obtained comply with the requirements mentioned above.

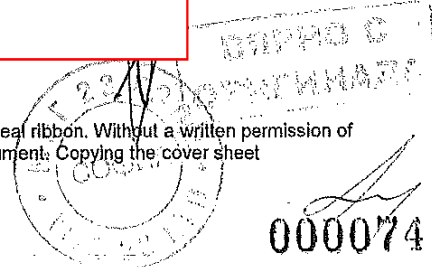


На основании чл.36а ал.3 от ЗОП

Berlin, November 05, 2015

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Documents and Addresses

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PSW-Documents

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A Test Document

is issued for parts of type tests which have successfully been carried out in full compliance with the relevant specifications or standards valid at the time of test. For these tests the equipment under test must be clearly identified by technical description, drawings and additional specifications.

A Test Report

is issued for all other tests which have been carried out according to specifications, standards and/or clients instructions. Similarly, this test report contains all test results, details of the conditions under which the tests were carried out, also details relating to the behaviour of the equipment during test, and its condition after the tests.

A Test Confirmation

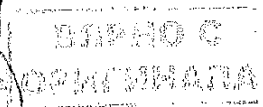
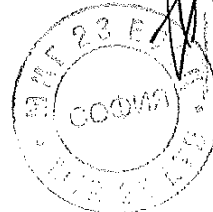
is issued immediately after the tests. It confirms that the tests have been conducted and is valid only until publishing the detailed results in an entire document.

Addresses

Testing Station: Prüffeld der Schaltwerke, Berlin
Siemens AG
EM MS R&D OC TD
Nonnendammallee 104
13629 Berlin
Germany

Manufacturer: Siemens AG
EM MS O SD BLN MF
Nonnendammallee 104
13629 Berlin
Germany

Client: Siemens AG
EM MS R&D OC
Nonnendammallee 104
13629 Berlin
Germany



**Technical Data of Test Object
Circuit-Breaker**

Test object: Three-pole vacuum circuit-breaker
Designation: 3AE5324-2 with vacuum interrupters VSS12-1-31-A5
Manufacturer: Siemens AG, EM MS O SD BLN MF, Berlin
Serial No.: 3AE5/00004952
Year of manufacture: 2015
Drawing No.: Drawings and parts lists - see sheet 6 and 7

Ratings assigned by the manufacturer:

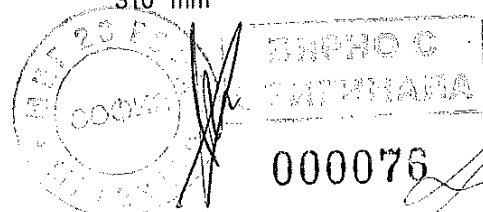
Rated voltage	24 kV
Rated normal current	1250 A
Rated frequency	50/60 Hz
Rated lightning impulse withstand voltage	125 kV
Rated switching impulse withstand voltage	- kV
Rated power-frequency withstand voltage	65 kV
Rated peak withstand current	65 kA
Rated short-time withstand current	25 kA
Rated duration of short-circuit	3 s
Rated short-circuit breaking current	25 kA
DC component of the rated short-circuit breaking current <small>(Valid for a minimum opening time of 21 ms, a relay-time of 10 ms and a time constant of 45 ms)</small>	50 %
Rated short-circuit making current	65 kA
Rated transient recovery voltage	41.2 kV
Rate of rise of transient recovery voltage	0.47 kV/μs
First-pole-to-clear factor	1.5
Rated operating sequence	O - 0.3 s - CO - 3 min - CO
Arc extinguishing medium	Vacuum
Rated filling pressure for interruption	- MPa abs. at 20 °C
Minimum functional pressure for interruption	- MPa abs. at 20 °C
Insulating medium	Air
Rated filling pressure for insulation	- MPa abs. at 20 °C
Minimum functional pressure for insulation	- MPa abs. at 20 °C
Driving mechanism (type)	Spring, charged by motor
Number of poles	3
Number of units per pole	1
Rated opening time	< 60 ms
Rated closing time	< 60 ms
Rated supply voltage of opening device	110 V d.c.
Rated supply voltage of closing device	110 V d.c.
Rated supply voltage of auxiliary circuits	110 V d.c.
Rated frequency of supply voltage	- Hz
Rated line /cable-charging breaking current	10 / 31.5 A
Rated single capacitor bank breaking current	400 A
Classification of circuit-breaker	Class M2, E2, C2, S1

Further data:

Serial number of vacuum interrupter in pole L1 / L2 / L3
 Pole centre distance
 Width across flats

S000197 / S000158 / S000149
 210 mm
 310 mm

Essential characteristics:



Тестов документ
за вакуумен мощностен прекъсвач 3AE5353-1
(24kV, 20kA, 800A)

вакуумен мощностен прекъсвач 3AE е типово тестван в съответствие с

IEC 62271-1 версия 1.1, 2011-08

IEC 62271-100, версия 2.1, 2012-09 и съответните хармонизиращи документи

за вакуумен мощностен прекъсвач 3AE5353-1 долупосочените тестове са валидни

Изпитания	Стойност	Документ
Диелектрични изпитание на изолацията	$U_p = 125kV$ $U_d = 50kV$	15-070-MH
Изпитание за температурна устойчивост	$I_r = 800 A$	15-075-ME
Изпитания за механична устойчивост при температура на околната среда, ниска и висока температура	10.000 Цикъла -25/ +55 °C	15-073-MM 17-086-MM
Изпитания за устойчивост на върхов и ток на късо съединение	$I_{sc} = 20kA/3s$ $I_{ma} = 50kA$	15-055-MS
Изпитания за термична и динамична устойчивост	$I_{sc} = 20kA$ $I_{ma} = 50kA$	15-054-MS-1

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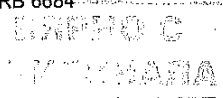
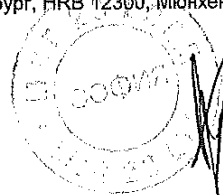
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Тестов документ
за вакуумен мощностен прекъсвач 3AE5353-1
(24kV, 20kA, 800A)

Ако се провежда изпитване с вакуумен прекъсвач с различен поръчков номер, валидността на документа за изпитване се дава чрез следните изявления:

Изброените тестови документи за посочения вакуумен прекъсвач са валидни поради сходен дизайн на вакуумните прекъсвачи и предвид, че конструкцията на пътя на основния ток и механичният задвижващ механизъм са почти еднакви.

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Енергиен мениджмънт
SOT 11628c

Тестов документ
за вакуумен мощностен прекъсвач 3AE5353-1
(24kV, 20kA, 800A)

В допълнение към типовите изпитания в съответствие с IEC 62271-1 и IEC 62271-100 са извършени следните тестове:

Изпитания	Документ
Изпитания за еднофазно и двуфазно земно късо съединение	15-054-MS-1
Изпитания с капацитивен ток	15-065-MS
Изпитания за термична и динамична устойчивост без фаза	16-085-MS
Тест за електрическа устойчивост, клас E2	15-096-MS

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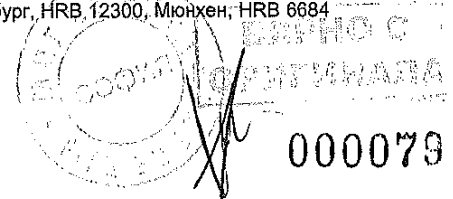
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Summary of type tests for Vacuum Circuit-Breaker 3AE5353-1 (24 kV, 20 kA, 800 A)

The vacuum circuit-breakers of type 3AE5 were type tested in accordance with

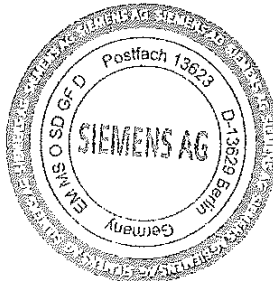
IEC Publication 62271-1, Edition 1.1, 2011-08,
IEC Publication 62271-100, Edition 2.1, 2012-09 and the relevant harmonisation documents.

For vacuum circuit-breaker 3AE5353-1 the following test documents are valid:

Type Tests	Rated Values	Test Documents
Dielectric tests	U _p = 125 kV U _d = 50 kV	15-070-MH
Temperature-rise tests	I _r = 800 A	15-075-ME
Mechanical operation test at ambient temperature, Low and high temperature tests	10.000 op. Cycles -25 / 40 °C	15-073-MM 15-072-MM
Short-time withstand current and peak withstand current tests	I _{sc} = 20 kA/3s I _{ma} = 50 kA	15-055-MS
Short-circuit making and breaking tests	I _{sc} = 20 kA I _{ma} = 50 kA	15-054-MS-1

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Berlin, July 11, 2017

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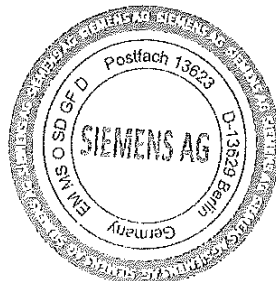
Siemens Aktiengesellschaft; Vorsitzender des Aufsichtsrats: Gerhard Cromme; Vorstand: Joe Kaeser, Vorsitzender:
Roland Busch, Lisa Davis, Klaus Helmrich, Janina Kugel, Cedrik Nelke, Michael Sen, Ralf P. Thomas
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Summary of type tests for Vacuum Circuit-Breaker 3AE5353-1 (24 kV, 20 kA, 800 A)

If a test is carried out with a vacuum circuit-breaker with different order number, the validity of the test document is given by the following statements:

The listed test documents for the mentioned vacuum circuit-breaker are valid in respect to familiar design of the vacuum circuit-breakers, as the construction of the main current path and mechanical driving mechanism is nearly identical.

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Berlin, July 11, 2017

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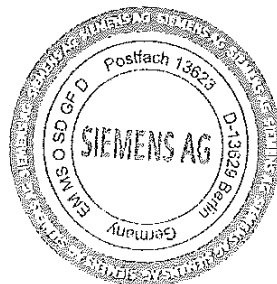
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Summary of type tests for Vacuum Circuit-Breaker 3AE5353-1 (24 kV, 20 kA, 800 A)

In addition to the type tests in accordance with IEC 62271-1 and IEC 62271-100 the following tests were carried out:

Type Tests	Test Documents
Single-phase and double earth fault tests	15-054-MS-1
Capacitive current switching tests: - cable-charging current breaking tests - line-charging current breaking tests - single capacitor bank switching tests	15-065-MS
Out-of-phase making and breaking tests	16-085-MS
Electrical endurance test on class E2	15-096-MS

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Тестов документ
за вакуумен мощностен прекъсвач 3AE5353-2
(24kV, 20kA, 1250A)

вакуумен мощностен прекъсвач 3AE е типowo тестван в съответствие с

IEC 62271-1 версия 1.1, 2011-08
IEC 62271-100, версия 2.1, 2012-09 и съответните хармонизиращи документи

за вакуумен мощностен прекъсвач 3AE5353-2 долупосочените тестове са валидни

Изпитания	Стойност	Документ
Диелектрични изпитание на изолацията	$U_p = 125kV$ $U_d = 50kV$	15-070-MH
Изпитание за температурна устойчивост	$I_r = 800 A$	15-075-ME
Изпитания за механична устойчивост при температура на околната среда, ниска и висока температура	10.000 Цикъла -25/ +55 °C	15-073-MM 17-086-MM
Изпитания за устойчивост на върхов и ток на късо съединение	$I_{sc} = 20kA/3s$ $I_{ma} = 50kA$	15-055-MS
Изпитания за термична и динамична устойчивост	$I_{sc} = 20kA$ $I_{ma} = 50kA$	15-054-MS-1

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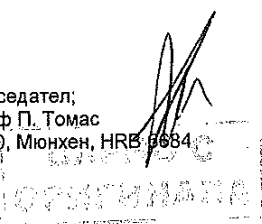
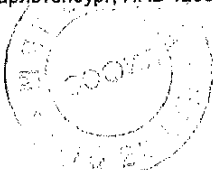
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Тестов документ
за вакуумен мощностен прекъсвач 3AE5353-2
(24kV, 20kA, 1250A)

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