PS ELECTRIC®

ПАПКА 10

ПРИЛОЖЕНИЕ 10 Други документи за Позиция1 и Позиция 2

ПРИЛОЖЕНИЕ 10.2 КРУ

Приложение 8;9

Приложение 10

Приложение 11

Приложение 12

Приложение 13

Приложение 14

Приложение 15

Приложение 16

Приложение 17

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8.9

SIEMENS

TÜVRheinland

Списък на типовите изпитания

съгласно IEC/EN 62271-200

към оферта по търг № CZD13 - 006

Идентификационен номер: 8DJH-012-090924-e **Съдържание:** 1 стр.

Обект на изпитванията: SF_6-изолиран, метално-капсулован панел вход/изход тип R на КРУ средно напрежение (24 kV; 630 A; 16 kA / 1 s)

Тип изпитване	Тип документ	Номер на документа
Изпитвания на изолацията	Протокол от изпитването	0877Fr-3
Изпитвания на температурна устойчивост Измерване на съпротивлението на главната верига	Протокол от изпитването	08116Fr
Изпитвания на токовете на термична и динамична устойчивост - на главните вериги - на заземителните вериги	Протокол от изпитването	0886Fr
Проверка на изключвателната и включвателната възможности	Сертификат Протокол от изпитването	KEMA 133-07 0818Bm
Изпитвания на механична устойчивост: - на комутационните устройства - на блокировките - на правилното функциониране на устройството за индикация на положението	Протокол отизпитването Протокол от изпитването Протокол от изпитването	08117Fr-1 08117Fr-2 08130Fr
Проверка на степента на защита	Протокол от изпитването	08122Fr
Изпитвания на херметичността	Протокол от изпитването	08121Fr
Изпитване на устойчивост на налягане	Протокол от изпитването	0880Fr
Изпитване на устойчивост на вътрешна електрическа дъга (когато е приложимо) - в комутационното отделение, напълнено с газ - в отделението на кабелните присъединения	Протокол от изпитването Протокол от изпитването	0846Fr 0850Fr

Гореописаната комплектна разпределителна уредба отговаря на стандартите, цитирани в съответните тестови документи.

Списъкът може да съдържа тестови документи, които се отнасят за КРУ с различни технически параметри. Тези документи също са валидни за гореописания обект на изпитванията.

На основание чл. 2
от ЗЗЛД

ВЯРНО С
ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0877Fr-3 **Copy No.:** 0 **Contents:** 20 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of cable panel type -K-, bus sectionalizer panel type -S- and ring-main panel type -R-

Designation: Ring-main panel type -R-

Rated voltage:	24 kV	Rated normal current:	630 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA/ 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 17 July 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.2.6

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.2.6

IEC 62271-1: 2007-10, clause 6.2.6

DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.2.6

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Dielectric tests"

1. Power frequency voltage test 50 Hz; 50 kV - 1 min between phases and to earth and across the contact gap and 60 kV 1 min at the isolating distance
2. Lightning impulse voltage test 1,2/50 µs; ± 125 kV between phases and to earth and across the contact gap and ± 145 kV at the isolating distance

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN – PEHLA

Mannheim, 3 September 2008

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

РНО С
ИГИНАЛА

02PE0804

Deutscher Akkreditierungs Rat DAR

DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

PEHLA is founder member of the SHORT-CIRCUIT TESTING LIAISON (STL) which has been established in 1969. STL is a forum for the international cooperation of the testing organisations with the further full members ASTA (UK), CESI (IT), CPRI (IND), ESEF (FR), KEMA (NL), SATS (NO, SE, FI), STLNA (US, CA) and JSTC (JP). In the framework of EC, STL (EU) has been recognised in 1992 by EOTC as agreement group.

PEHLA-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 and STL Guides valid at the time of the test. For these tests the test object 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 and STL Guides valid at the time of test. For these tests the test object 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 or "PEHLA-Richtlinien" (PEHLA Guides) 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 test object, 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.

Uncertainty of the measurement systems

The PEHLA - Testing Laboratories apply the PEHLA Guide No. 12 for determining the uncertainties of measurement, based on ENV 13005 (Guide to the expression of uncertainty in measurement). As long as no explicit statements are made, the uncertainties required by the relevant standards have been complied with.

Addresses

Office:
PEHLA-Geschäftsstelle
Hallenweg 40
68219 Mannheim
Germany
Internet: www.pehla.com

Testing Station:
PEHLA-Testing Laboratory
Frankfurt am Main
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Manufacturer:
Siemens AG
E D MV
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Client:
Siemens AG
E D MV 2
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08116Fr **Copy No.:** 0 **Contents:** 37 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH, consisting of circuit-breaker panel type -L-, transformer panel type -T- and ring-main panel type -R-

Designation: Circuit-breaker panel type -L- and ring-main panel type -R-

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz
Rated peak withstand current:	40 kA	Rated short-time withstand current:	16 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse-link.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 1 to 11 September 2008

Applied test specifications:

IEC 62271-200: 2003-11,
clauses 6.4.1, 6.5.1 - 6.5.4 and 6.5.6
IEC 62271-1: 2007-10,
clauses 6.4.1, 6.5.1 - 6.5.4 and 6.5.6
IEC 62271-105: 2002-08,
clauses 6.4 and 6.5

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10,
Abschnitte 6.4.1, 6.5.1 - 6.5.4 und 6.5.6
DIN EN 62271-1 (Entwurf): 2004-12 (VDE 0671 Teil1),
Abschnitte 6.4.1, 6.5.1 - 6.5.4 und 6.5.6
DIN EN 62271-105 (VDE 0671 Teil 105): 2003-12,
Abschnitte 6.4 und 6.5

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Temperature-rise type test:

1. Measurement of the resistance of the main circuit before the temperature-rise test
2. Temperature-rise test at the rated normal current of 630 A / 50 Hz of the circuit-breaker panel type -L- and of the ring-main panel type -R-
3. Measurement of the resistance of the main circuit after the temperature-rise test

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 14 October 2008

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

PEHLA is founder member of the SHORT-CIRCUIT TESTING LIAISON (STL) which has been established in 1969. STL is a forum for the international cooperation of the testing organisations with the further full members ASTA (UK), CESI (IT), CPRI (IND), ESEF (FR), KEMA (NL), SATS (NO, SE, FI), STLNA (US, CA) and JSTC (JP). In the frame-work of EC, STL (EU) has been recognised in 1992 by EOTC as agreement group.

PEHLA-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 and STL Guides valid at the time of the test. For these tests the test object 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 and STL Guides valid at the time of test. For these tests the test object 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 or "PEHLA-Richtlinien" (PEHLA Guides) 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 test object, 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.

Uncertainty of the measurement systems

The PEHLA - Testing Laboratories apply the PEHLA Guide No. 12 for determining the uncertainties of measurement, based on ENV 13005 (Guide to the expression of uncertainty in measurement). As long as no explicit statements are made, the uncertainties required by the relevant standards have been complied with.

Addresses

Office:	PEHLA-Geschäftsstelle Hallenweg 40 68219 Mannheim Germany Internet: www.pehla.com
Testing Station:	PEHLA-Testing Laboratory Frankfurt am Main Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Manufacturer:	Siemens AG E D MV Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Client:	Siemens AG E D MV 2 Carl-Benz-Straße 22 60386 Frankfurt am Main Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0886Fr **Copy No.:** 0 **Contents:** 23 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of ring-main panel type -R- and cable panel type -K-

Designation: Ring-main panel type -R-

Rated voltage:	24 kV	Rated normal current:	630 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 24 July 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.6

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.6

IEC 62271-1: 2007-10, clause 6.6.

DIN EN 62271-1 (Entwurf): 2004-12 (VDE 0671 Teil 1), Abschnitt 6.6

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Short-time and peak withstand current test" at 50 Hz

- Test on main circuits
- Test on earthing circuits
- Test on earthing circuit of the enclosure

(continued on sheet 3)

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

Mannheim, 15 December 2008

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

PEHLA is founder member of the SHORT-CIRCUIT TESTING LIAISON (STL) which has been established in 1969. STL is a forum for the international coopération of the testing organisations with the further full members ASTA (UK), CESI (IT), CPRI (IND), ESEF (FR), KEMA (NL), SATS (NO, SE, FI), STLNA (US, CA) and JSTC (JP). In the frame-work of EC, STL (EU) has been recognised in 1992 by EOTC as agreement group.

PEHLA-Documents

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Addresses

Office:	PEHLA-Geschäftsstelle Hallenweg 40 68219 Mannheim Germany Internet: www.pehla.com
Testing Station:	PEHLA-Testing Laboratory Frankfurt am Main Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Manufacturer:	Siemens AG Energy Sector E D MV Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Client:	Siemens AG Energy Sector E D MV 2 Carl-Benz-Straße 22 60386 Frankfurt am Main Germany

ВЯРНО С ОРИГИНАЛА

Tests performed

(Continuation from sheet 1)

Test 0886Fr-03

From the bushings of ring-main outgoing feeder -R- across the three-position switch disconnector SD in "ON" position to the bushings of cable outgoing feeder -K- with I_p = 57,1kA; I_k = 21,4kA – 3,02s (corresponding to I_k = 21,0kA – 3,13s)

Test 0886Fr-04

From the bushings of ring-main outgoing feeder -R- to the three-position switch disconnector SD in "EARTHED" position with I_p = 57,7kA; I_k = 21,2kA – 3,01s (corresponding to I_k = 21,0kA - 3,07s)

Test 0886Fr-05

Single phase from the bushing L3 of ring-main outgoing feeder -R- across the three-position switch disconnector SD in "EARTHED" position to the earthing connection (M12) of the earthing busbar in the cable outgoing feeder -K- with I_p = 57,2kA; I_k = 21,7kA – 1,00s (corresponding to I_k = 21,0kA – 1,07s)

Test 0886Fr-06

Single phase from the earthing connection (M12) of the earthing busbar in the ring-main outgoing feeder -R- to the earthing connection (M12) of the earthing busbar in the cable outgoing feeder -K- with I_p = 57,1kA; I_k = 21,7kA – 1,01s (corresponding to I_k = 21,0kA – 1,08s)

ВЯРНО С ОРИГИНАЛА

KEMA

133-07

TYPE TEST CERTIFICATE OF SHORT-CIRCUIT AND SWITCHING PERFORMANCE

APPARATUS A three-phase three-position load break switch-disconnector in an SF_6-insulated metal-enclosed switchgear, type 8DJH

DESIGNATION 8DJH R **SERIAL No.** RK4 and RK5

Rated voltage	**24 kV (1)**	**Rated normal current**	**630 A**
Rated short-circuit current	**20 kA**	**Rated frequency**	**50 Hz**

(1) See note on page 6.

MANUFACTURER Siemens AG, PTD M 2,
Frankfurt am Main, Germany

TESTED FOR Siemens AG, PTD M 2,
Frankfurt am Main, Germany

TESTED BY KEMA HIGH-POWER LABORATORY
Utrechtseweg 310 - 6812 AR Arnhem - The Netherlands

DATE(S) OF TESTS 17, 18, 19, 25, 26 and 29 October 2007

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 60265-1, subclause 6.6 (STC), 6.101 (Mainly active load current (100% and 5%), Cable-charging current (100% and 30%), Duty 5, 6a, 6b and Closed-loop distribution and Earth fault test)

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard(s) and to justify the ratings assigned by the manufacturer as listed on page 6.

The Certificate applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 329 sheets in total.

This Certificate falls under the scope of the accreditation certificate L 020 of the Dutch Council for Accreditation. See information sheet (page 2).

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Version: 1

1 Certificate

A Certificate contains a record of a series of type tests carried out strictly in accordance with a recognized standard. The equipment tested has fulfilled the requirements of this standard and the relevant ratings assigned by the manufacturer are endorsed by KEMA. The Certificate is applicable only to the equipment tested. KEMA is responsible for the validity and the contents of the Certificate.
The responsibility for conformity of any apparatus having the same designation as the one tested rests with the manufacturer. The Certificate contains the essential drawings and a description of the equipment tested.
Detailed rules are given in KEMA's Certification procedure.

2 Report of Performance

A Report of Performance contains a record of one or more tests which have been carried out according to the client's instructions. These tests are not necessarily in accordance with a recognized standard. The test results do not verify ratings of the test object.

KEMA issues three types of Reports of Performance:

***2.1** The tests have been carried out strictly in accordance with .... The apparatus has complied with the relevant requirements.*

This sentence will appear on the front page of a Report of Performance if the tests have been performed in accordance with a recognized standard, but the series of tests does not completely fulfil the requirements for a Certificate of Compliance (for example, if the number of test duties is not a complete series of type tests). The Report contains verified drawings and a description of the equipment tested. Detailed rules are given in KEMA's Certification procedure. The condition of the test object after the tests is assessed and recorded in the Report.

***2.2** The tests have been carried out in accordance with the client's instructions. Test procedure and test parameters were based on ....*

This sentence will appear on the front page of a Report of Performance if the number of tests, the test procedure and the test parameters are based on a recognized standard and related to the ratings assigned by the manufacturer. If the apparatus does not pass the tests such behaviour will be mentioned on the front sheet. Verification of the drawings (if submitted) and assessment of the condition after the tests is only done on the client's request.

***2.3** The tests have been carried out according to the client's instructions.*

This sentence will appear on the front page of a Report of Performance if the tests, test procedure and/or test parameters are not in accordance with a recognized standard.

3 Standards

When reference is made to a standard, and the date of issue is not stated, this applies to the latest issue, including amendments which have been officially published prior to the date of the tests.

4 Official and uncontrolled test documents

The official test documents of KEMA High-Power Laboratory are issued in bound form. Uncontrolled copies may be provided as loose sheets or as a digital file for convenience of reproduction by the client. The copyright has to be respected at all times.

5 Accuracy of measurement

In the table of test results the measured quantities are given in three digits. This method of presentation does not indicate an accuracy. The guaranteed uncertainty in the figures mentioned, taking into account the total measuring system, is less than 5%, unless mentioned otherwise.

6 Qualified by RvA (Dutch Council for Accreditation)

KEMA High-Power Laboratory and High-Voltage Laboratory have been entered in the RvA-register for laboratories under resp. Nrs. L 020 and L 218 for the testing services as defined in the Field of Accreditation.
The accreditation is carried out in accordance with ISO/IEC 17025.

ВЯРНО С ОРИГИНАЛА

TABLE OF CONTENTS:

ВЯРНО С ОРИГИНАЛА

ВЯРНО С ОРИГИНАЛА

RATINGS ASSIGNED BY THE MANUFACTURER

Voltage	24 kV (1)	
Normal current	630 A	
Number of poles	3	
Frequency	50 Hz	X
Short-time withstand current	20 kA	X
Peak withstand current	50 kA	X
Duration of short-circuit	3 s	X
Short-circuit making current	50 kA	X
Mainly active load breaking current	630 A	X
Closed-loop breaking current	630 A	X
Cable-charging breaking current	63 A	X
Cable-charging breaking current under conditions	109 A	X
Earth-fault breaking current	189 A	X
Pressure for interruption SF_6 at 20 °C	0,15 MPa	
Pressure for insulation SF_6 at 20 °C	0,15 MPa	
Type of switch	General purpose switch	
Class	E3	X

X = This rating has been proved by the tests of this Certificate.

(1) On request of the client, the tests have been based on a voltage of 25 kV.

DESCRIPTION OF APPARATUS TESTED

A three-phase three-position load break switch-disconnector in an SF_6-insulated metal-enclosed switchgear, type 8DJH

Minimum pressure for interruption at 20 °C	0,13 MPa
Maximum pressure for interruption at 20 °C	0,15 MPa

Mechanism:
Independent manual closing (springs).
Independent manual opening (springs).
For test purposes operated by pneumatic system, therefore no values of the opening and closing times are given in this report.

TRAVEL RECORDER

Travel recorder attached to main contact shaft. Linear with contact travel.

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Confirmation

Report No.: 0818Bm-0 **Copy No.:** 0 **Contents:** 1 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of ring-main panel type -R- and cable panel type -K-

Designation: Three-position switch-disconnector of ring-main panel type -R-

Rated voltage:	24 kV	Rated normal current:	630 A	Rated frequency:	50 / 60 Hz
Rated peak withstand current:	54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Serial No.: TP3
Drawing No.: 500-8000.9

Manufacturer: Siemens AG, E D MV
Client: Siemens AG, E D MV 2
Testing station: PEHLA-Testing Laboratory Berlin-Marzahn
Date of test: 14. August 2008

Applied test specifications:

IEC 60265-1: 1998-01, clause 6.101.10
DIN EN 60265-1 (VDE 0670 Teil 301): 1999-05, Abschnitt 6.101.10

IEC 62271-102: 2001-12, clause 6.101
DIN EN 62271-102 (VDE 0671 Teil 102): 2003-10, Abschnitt 6.101

Tests performed:

Type Test "Making and breaking tests"

1. 10 make-break operating cycles with the switch-disconnector function at mainly active load current I_1 = 630 A at test voltage of 25 kV
2. 5 making operations with the switch-disconnector function at short-circuit making current I_{ma} = 54,6 kA at test voltage of 25 kV
3. 5 making operations with the earthing-switch function at short-circuit making current I_{ma} = 54,6 kA at test voltage of 25 kV

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.
Achieved electrical endurance class of the disconnector (according IEC 60265-1): E3
Achieved electrical endurance class of the earthing switch (according IEC 62271-102): E2
Detailed results will be documented in a separate document.

ВЯРНО С ОРИГИНАЛА

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

Berlin-Marzahn, 14. August 2008

Deutscher Akkreditierungs Rat
DAR
DAT-P-019/92-63

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-019/92-63).

STL-Member

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PEHLA-Documents

A Type Test Certificate

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Addresses

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68219 Mannheim
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Internet: www.pehla.com

Testing Station:
PEHLA-Testing Laboratory
Berlin-Marzahn
Landsberger Allee 378A
12681 Berlin
Deutschland

Manufacturer:
Siemens AG
Energy Sector
E D MV
Carl-Benz-Straße 22
60386 Frankfurt am Main
Deutschland

Client:
Siemens AG
Energy Sector
E D MV 2
Carl-Benz-Straße 22
60386 Frankfurt am Main
Deutschland

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08117Fr-1 **Copy No.:** 0 **Contents:** 16 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630A / 180A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 20 to 24 September 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6

IEC 60265-1: 1998-11, clause 6.102

DIN EN 60265-1 (VDE 0670 Teil 301): 1999-05, Abschnitt 6.102

IEC 62271-102: 2003-08 clause 6.102

DIN EN 62271-102 (VDE 0671 Teil 102): 2004-10, Abschnitt 6.102

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Mechanical operation test"

1000 On-Off operations with the switch-disconnector of ring-cable feeder R1 for class M1
1000 Earth-Off operations with the make proof earthing switch of ring-cable feeder R1
1000 On-Off operations with the switch-disconnector of transformer feeder T1 for class M1
1000 Earth-Off operations with the make proof earthing switch of transformer feeder T1

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 11 March 2009

02PE0804

Deutscher Akkreditierungs Rat DAR

DAT-P-013/92-54

Notes

Accreditation

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Addresses

Office:	PEHLA-Geschäftsstelle Hallenweg 40 68219 Mannheim Germany Internet: www.pehla.com
Testing Station:	PEHLA-Testing Laboratory Frankfurt am Main Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Manufacturer:	Siemens AG Energy Sector E D MV Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Client:	Siemens AG Energy Sector E D MV 2 Carl-Benz-Straße 22 60386 Frankfurt am Main Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08117Fr-2 **Copy No.:** 0 **Contents:** 16 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 20 - 24 September 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.102

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-09, Abschnitt 6.102

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Mechanical operation tests"

1. Switching devices and removable parts.
   The three-position switches of ring-main feeder R1 and transformer feeder T1 were operated 50 times.
2. Interlocks.
   The mechanical interlocks between three-position disconnector, "feeder" locking device (padlock) and cover of the cable compartment of ring-main feeder R1 and transformer feeder T1 were tested 50 times.

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 16 March 2009

02PE0804

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

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Germany

Client:
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60386 Frankfurt am Main
Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08130Fr **Copy No.:** 0 **Contents:** 14 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 08. Oktober 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6	DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6
IEC 62271-102: 2003-08, clause 6.105	DIN EN 62271-102 (VDE 0671 Teil 102): 2003-10, Abschnitt 6.105

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test „Tests to verify the proper function of the position-indicating device"
The tests were carried out on the ring-cable feeder R1

- Test on the power resp. position-indicating kinematic chain of the disconnector with independent manual operation
- Test on the power resp. position-indicating kinematic chain of the earthing-switch with independent manual operation

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

Mannheim, 20 March 2009

02PE0804

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

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STL-Member

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ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08122Fr-1 **Copy No.:** 0 **Contents:** 13 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 23 September 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.7.1	DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.7.1
IEC 62271-1: 2007-10, clause 6.7.1	DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.7.1
IEC 60529: 2003-01	DIN EN 60529 (VDE 0470 Teil 1): 2000-09

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Verification of the IP coding"
Protection of the enclosure of the Ring-main transformer panel block type RRT against access to hazardous parts and protection against solid foreign objects, degree of protection IP3X.

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 20 March 2009

Deutscher Akkreditierungs Rat DAR
DAT-P-013/92-54

Notes

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ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08122Fr-2 **Copy No.:** 0 **Contents:** 13 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 23 September 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.7.1	DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.7.1
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IEC 60529: 2003-01	DIN EN 60529 (VDE 0470 Teil 1): 2000-09

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Verification of the IP coding"
Protection of the enclosure of the ring-main transformer panel block type RRT against access to hazardous parts and protection against solid foreign objects, degree of protection IP2X.

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN – PEHLA

ВЯРНО С ОРИГИНАЛА

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

Mannheim, 20 March 2009

02PE0804

Deutscher Akkreditierungs Rat DAR

DAT-P-013/92-54

Notes

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ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08121Fr **Copy No.:** 0 **Contents:** 12 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 12 and 23 September 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.8	DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.8
IEC 62271-1: 2007-10, clause 6.8	DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.8

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Tightness tests before and after mechanical operation test"

1. Tightness test of gas-filled compartment before the mechanical operation test
2. Mechanical operation tests with the ring-cable feeder R1 and R2 and with the transformer feeder T1 (1000 CLOSE - OPEN and 1000 EARTHED - OPEN operations)
3. Tightness test of gas-filled compartment after the mechanical operation test

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 04 February 2009

02PE0804

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

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STL-Member

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PEHLA-Documents

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A Test Confirmation

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Uncertainty of the measurement systems

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Testing Station:
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60386 Frankfurt am Main
Germany

Manufacturer:
Siemens AG
Energy Sector
E D MV
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Client:
Siemens AG
Energy Sector
E D MV 2
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0880Fr **Copy No.:** 0 **Contents:** 9 **Sheets**

Test object: Gas – Insulated Switchgear Type 8DJH

Designation: Switchgear vessel of the ring main panel type -R-

Rated voltage:	up to 24 kV	Rated normal current:	up to 630 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	up to 62,5 kA	Rated short-time withstand current:	up to 25 kA	Rated duration of short-circuit:	up to 3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 16 July 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.103

DIN EN 62271-200: 2004-10 (VDE 0671 Teil 200), Abschnitt 6.103

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type Test "Pressure withstand test for gas-filled compartments with pressure relief devices"

- The relative pressure was increased up to 110 kPa in order to reach a value of 1,3 times the design pressure of 85 kPa of the compartment for a period of 1 min. The pressure relief device did not operate.
- Then the pressure should have been increased up to a maximum value of 255 kPa (e.g. 3 times the design pressure of 85 kPa). The pressure relief device operated, as designed by the manufacturer, below this value. The reached opening overpressure was 212 kPa.

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN – PEHLA

Mannheim, 06 November 2008

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Deutscher Akkreditierungs Rat DAR

DAT-P-013/92-54

Notes

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E D MV
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Client:
Siemens AG
E D MV 2
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0846Fr **Copy No.:** 0 **Contents:** 22 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of ring-main panel type -R- and cable panel type -K-

Designation: Ring-main panel type -R-

Rated voltage:	24 kV	Rated normal current:	630 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 10 June 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.106

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.106

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type Test "Internal arcing test" of the gas filled compartment

Testing under conditions of arcing due to an internal fault according classification IAC AFLR 21 kA 1 s.

Three-phase arc initiation within the switchgear vessel with a peak current of I_p = 53,5 kA and a short-circuit current of I_k = 21,7 kA – 1,01 s (I_k = 21,0 kA – 1,04 s accordingly).

(Continued on sheet 3)

Test results:

The assessment of the effects under condition of arcing due to an internal fault corresponding to the criteria 1 to 5 of the above mentioned test specification is compiled on sheet 3.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 06 August 2008

Deutscher Akkreditierungs Rat DAR

DAT-P-013/92-54

Notes

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Manufacturer:	Siemens AG Energy Sector E D MV Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Client:	Siemens AG Energy Sector E D MV 2 Carl-Benz-Straße 22 60386 Frankfurt am Main Germany

ВЯРНО С ОРИГИНАЛА

Test performed

(Continuation from sheet 1)

The test on the medium voltage switchgear was performed for accessibility type A (restricted to authorized personal only).

The test of the free-standing panel took place in a room mock-up with an effective ceiling height of 2,00 m. The distance between the rear wall of the switchgear and the room mock-up was 0,80 m, between the top of the switchgear and the ceiling of the room mock-up was 0,60 m and between the right lateral wall and the room mock-up was 0,10 m.

Vertical indicators were arranged at a distance of 0,30 m.
The Indicators were arranged at three sides of the switchgear (front, left lateral and rear side), covering 40% to 50% of the area.

The three-phase infeeding of the current was in the cable connection compartment of cable panel type -K- via cables 240 mm^2.

Three-phase arc initiation was at the bushings for cable plug within the gas filled compartment of ring-main panel type -R-.

The pressure relief effected downwards into the cable basement mock-up.

The opening for the manual operation for the mechanism of the load-break switch function was in open position.

Test results

(Continuation from sheet 1)

Test-no. 0846Fr / 01

Criteria according to IEC 62271-200		fulfilled (yes/no)
No.1:	Correctly secured doors and covers do not open	yes
No.2:	No fragmentation of the enclosure occurs and no parts more than 60 g flow away	yes
No.3:	Arcing does not cause holes in the accessible sides up to a height of 2 m	yes
No.4:	Indicators do not ignite due to the effect of hot gases	yes
No.5:	The enclosure remains connected to its earthing point	yes

Test results: The test has been passed.

Achieved class of the gas filled compartment: IAC AFLR 21 kA 1 s.

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0850Fr **Copy No.:** 0 **Contents:** 22 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of ring-main panel type -R- and cable panel type -K-

Designation: Ring-main panel type -R-

Rated voltage:	24 kV	Rated normal current:	630 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 11 June 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.106

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.106

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type Test "Internal arcing test" of the cable connection compartment

Testing under conditions of arcing due to an internal fault according classification IAC AFLR 21 kA 1 s.

Two-phase arc initiation within the cable connection compartment of ring-main panel -R- with a peak current of I_p = 45,9 kA and a short-circuit current of I_k = 18,5 kA – 1,01 s
(I_k = 18,3 kA = 21 kA × 0,87 – 1,02 s accordingly).

(Continued on sheet 3).

Test results:

The assessment of the effects under condition of arcing due to an internal fault corresponding to the criteria 1 to 5 of the above mentioned test specification is compiled on sheet 3.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 11 August 2008

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

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Manufacturer:	Siemens AG Energy Sector E D MV Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Client:	Siemens AG Energy Sector E D MV 2 Carl-Benz-Straße 22 60386 Frankfurt am Main Germany

ВЯРНО С ОРИГИНАЛА

Test performed

(Continuation from sheet 1)

The test on the medium voltage switchgear was performed for accessibility type A (restricted to authorized personal only).

The test of the free-standing panel took place in a room mock-up with an effective ceiling height of 2,00 m. The distance between the rear wall of the switchgear and the room mock-up was 0,80 m, between the top of the switchgear and the ceiling of the room mock-up was 0,60 m and between the right lateral wall and the room mock-up was 0,10 m.

Vertical indicators were arranged at a distance of 0,30 m.
The Indicators were arranged at three sides of the switchgear (front, left lateral and rear side) and covering 40% to 50% of the area.

The three-phase infeeding of the current was in the cable connection compartment of cable panel type -K- via cables 240 mm^2.

The two-phase arc initiation between L1 and L2 was within the cable connection compartment of ring-main panel -R-.The cables of phase L1 and L2 were connected without plugs, phase L3 was connected with a T-plug type EUROMOLD K400TB.

The pressure relief effected downwards into the cable basement mock-up.

The opening for the manual operation for the mechanism of the load-break function was in open position.

Test results

(Continuation from sheet 1)

Test-no. 0850Fr / 01

Criteria according to IEC 62271-200		fulfilled (yes/no)
No.1:	Correctly secured doors and covers do not open	yes
No.2:	No fragmentation of the enclosure occurs and no parts more than 60 g flow away	yes
No.3:	Arcing does not cause holes in the accessible sides up to a height of 2 m	yes
No.4:	Indicators do not ignite due to the effect of hot gases	yes
No.5:	The enclosure remains connected to its earthing point	yes

Test results: The test has been passed.

Achieved class of the cable connection compartment: IAC AFLR 21 kA 1 s.

ВЯРНО С ОРИГИНАЛА

8.9

SIEMENS

TÜVRheinland

Списък на типовите изпитания

съгласно IEC/EN 62271-200

към оферта по търг № CZD13 - 006

Идентификационен номер: 8DJH-011-090806-e **Съдържание:** 1 стр.

Обект на изпитванията: SF_6-изолиран, метално-капсулован панел трансформаторен извод тип T на КРУ средно напрежение (24 kV; 630/200 A; 16 kA / 1 s)

Тип изпитване	Тип документ	Номер на документа
Изпитвания на изолацията	Протокол от изпитването	0861Fr
Изпитвания на температурна устойчивост Измерване на съпротивлението на главната верига	Протокол от изпитването	0862Fr
Изпитвания на токовете на термична и динамична устойчивост - на главните вериги - на заземителните вериги	Протокол от изпитването	0867Fr
Проверка на изключвателната и включвателната възможности	Сертификат Сертификат	KEMA 138-07 KEMA 146-07
Изпитвания на механична устойчивост: - на комутационните устройства - на блокировките - на правилното функциониране на устройството за индикация на положението	Протокол отизпитването Протокол от изпитването Протокол от изпитването Протокол от изпитването	08117Fr-1 08117Fr-3 08117Fr-2 08120Fr
Проверка на степента на защита	Протокол от изпитването	08122Fr
Изпитвания на херметичността	Протокол от изпитването	08121Fr
Изпитване на устойчивост на налягане	Протокол от изпитването	0879Fr
Изпитване на устойчивост на вътрешна електрическа дъга (когато е приложимо) - в комутационното отделение, напълнено с газ - в отделението на кабелните присъединения	Протокол от изпитването Протокол от изпитването	0883Fr 0813Bm

Гореописаната комплектна разпределителна уредба отговаря на стандартите, цитирани в съответните тестови документи.

Списъкът може да съдържа тестови документи, които се отнасят за КРУ с различни технически параметри. Тези документи също са валидни за гореописания обект на изпитванията.

На основание чл. 2
от ЗЗЛД

ВЯРНО С
ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0861Fr **Copy No.:** 0 **Contents:** 21 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of transformer panel type -T- and cable panel type -K-

Designation: Transformer panel type -T-

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 25 June 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.2.6 — DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.2.6

IEC 62271-1: 2007-10, clause 6.2.6 — DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.2.6

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Dielectric tests"

1. Power frequency voltage test 50 Hz; 50 kV - 1 min between phases and to earth and across the contact gap and 60 kV - 1min at the isolating distance.
2. Lightning impulse voltage test 1,2/50 µs; ± 125 kV between phases and to earth and across the contact gap and ± 145 kV at the isolating distance.

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 14 August 2008

02PE0804

Deutscher Akkreditierungs Rat DAR
DAT-P-013/92-54

Notes

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Manufacturer:	Siemens AG E D MV Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Client:	Siemens AG E D MV 2 Carl-Benz-Straße 22 60386 Frankfurt am Main Germany

ВЯРНО С ОРИГИНАЛ

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0862Fr **Copy No.:** 0 **Contents:** 30 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz
Rated peak withstand current:	52,5 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 23 to 26 June 2008

Applied test specifications:

IEC 62271-200: 2003-11,
clauses 6.4.1, 6.5.1 - 6.5.4 and 6.5.6
IEC 62271-1: 2007-10,
clauses 6.4.1, 6.5.1 - 6.5.4 and 6.5.6
IEC 62271-105: 2002-08,
clauses 6.4 and 6.5

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10,
Abschnitte 6.4.1, 6.5.1 - 6.5.4 und 6.5.6
DIN EN 62271-1 (Entwurf): 2004-12 (VDE 0671 Teil1),
Abschnitte 6.4.1, 6.5.1 - 6.5.4 und 6.5.6
DIN EN 62271-105 (VDE 0671 Teil 105): 2003-12,
Abschnitte 6.4 and 6.5

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

1. Temperature-rise type tests with following test currents:

Test No	Fuse-links in the transformer feeder 1 (T1)	Ring cable feeder 1 (R1)	Ring cable feeder 2 (R2)	Transformer feeder 1 (T1)
1.1	Siemens 3GD1 416-4D (24 kV / 80 A)	600 A / 50 Hz	630 A / 50 Hz	48 A / 50 Hz
1.2	Siemens 3GD1 232-4D (12 kV / 160 A)	575 A / 50 Hz	630 A / 50 Hz	76 A / 50 Hz

2. Measurement of the resistance of the main circuit before and after the temperature-rise tests.

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 12 August 2008

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

PEHLA is founder member of the SHORT-CIRCUIT TESTING LIAISON (STL) which has been established in 1969. STL is a forum for the international cooperation of the testing organisations with the further full members ASTA (UK), CESI (IT), CPRI (IND), ESEF (FR), KEMA (NL), SATS (NO, SE, FI), STLNA (US, CA) and JSTC (JP). In the frame-work of EC, STL (EU) has been recognised in 1992 by EOTC as agreement group.

PEHLA-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 and STL Guides valid at the time of the test. For these tests the test object 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 and STL Guides valid at the time of test. For these tests the test object 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 or "PEHLA-Richtlinien" (PEHLA Guides) 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 test object, 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.

Uncertainty of the measurement systems

The PEHLA - Testing Laboratories apply the PEHLA Guide No. 12 for determining the uncertainties of measurement, based on ENV 13005 (Guide to the expression of uncertainty in measurement). As long as no explicit statements are made, the uncertainties required by the relevant standards have been complied with.

Addresses

Office:
PEHLA-Geschäftsstelle
Hallenweg 40
68219 Mannheim
Germany
Internet: www.pehla.com

Testing Station:
PEHLA-Testing Laboratory
Frankfurt am Main
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Manufacturer:
Siemens AG
E D MV
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Client:
Siemens AG
E D MV 2
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0867Fr **Copy No.:** 0 **Contents:** 24 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of transformer panel type -T- and cable panel type -K-

Designation: Transformer panel type -T-

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 02 July 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.6

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.6

IEC 62271-1: 2007-10, clause 6.6.

DIN EN 62271-1 (Entwurf): 2004-12 (VDE 0671 Teil1), Abschnitt 6.6

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Short-time and peak withstand current test" at 50 Hz

- Test on main circuits
- Test on the earthing circuit of the enclosure
- Test of the earthing circuits

(continued on sheet 3)

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Mannheim, 15 December 2008

02PE0804

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

PEHLA is founder member of the SHORT-CIRCUIT TESTING LIAISON (STL) which has been established in 1969. STL is a forum for the international cooperation of the testing organisations with the further full members ASTA (UK), CESI (IT), CPRI (IND), ESEF (FR), KEMA (NL), SATS (NO, SE, FI), STLNA (US, CA) and JSTC (JP). In the frame-work of EC, STL (EU) has been recognised in 1992 by EOTC as agreement group.

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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 and STL Guides valid at the time of test. For these tests the test object 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 or "PEHLA-Richtlinien" (PEHLA Guides) 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 test object, 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.

Uncertainty of the measurement systems

The PEHLA - Testing Laboratories apply the PEHLA Guide No. 12 for determining the uncertainties of measurement, based on ENV 13005 (Guide to the expression of uncertainty in measurement). As long as no explicit statements are made, the uncertainties required by the relevant standards have been complied with.

Addresses

Office:	PEHLA-Geschäftsstelle Hallenweg 40 68219 Mannheim Germany Internet: www.pehla.com
Testing Station:	PEHLA-Testing Laboratory Frankfurt am Main Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Manufacturer:	Siemens AG Energy Sector E D MV Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Client:	Siemens AG Energy Sector E D MV 2 Carl-Benz-Straße 22 60386 Frankfurt am Main Germany

ВЯРНО С ОРИГИНАЛА

Test performed

(Continuation from sheet 1)

Test no. 0867Fr-08
From the bushings of cable outgoing feeder -K- to the left hand busbar bushings of the transformer panel type -T- with I_p = 56,4 kA; I_k = 21,4 kA – 3,01 s (corresponding to I_k = 21,0 kA – 3,12 s).

Test no. 0867Fr-10
From the earthing connection M12 of the earthing busbar in the transformer outgoing feeder -T- to the earthing connection M12 of the earthing busbar in the cable outgoing feeder -K- with
I_p = 56,4 kA; I_k = 21,8 kA – 1,00 s (corresponding to I_k = 21,0 kA – 1,08 s).

Test no. 0867Fr-13
From the bushing L3 of transformer outgoing feeder -T- across the three-position switch disconnector SD in earthed position to the earthing connection M12 of the earthing busbar in the cable outgoing feeder -K- with I_p = 6,5 kA; I_k = 2,8 kA – 1,02 s (corresponding to I_k = 2,5 kA – 1,28 s).

ВЯРНО С ОРИГИНАЛА

KEMA

138-07

TYPE TEST CERTIFICATE OF SHORT-CIRCUIT PERFORMANCE

APPARATUS A three-phase switch-fuse combination consisting of a three-position load break switch-disconnector in an SF_6-insulated metal-enclosed switchgear, type 8DJH

DESIGNATION 8DJH T **SERIAL No.** TR2

Rated voltage	24 kV	Rated normal current with fuses	100 A
Rated short-circuit breaking current	20 kA	Rated normal current of the switch	200 A
Rated take-over current	1300 A	Rated frequency	50 Hz

MANUFACTURER Siemens AG, PTD M 2,
Frankfurt am Main, Germany

TESTED FOR Siemens AG, PTD M 2,
Frankfurt am Main, Germany

TESTED BY KEMA HIGH-POWER LABORATORY
Utrechtseweg 310 - 6812 AR Arnhem - The Netherlands

DATE(S) OF TESTS 30 October 2007

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 62271-105, subclauses 6.101.2.1 TD_{isc}, 6.101.2.2 TD_{lWmax} and 6.101.2.4 TD_{ITO}

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard(s) and to justify the ratings assigned by the manufacturer as listed on page 5.

The Certificate applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 58 sheets in total.

This Certificate falls under the scope of the accreditation certificate L 020 of the Dutch Council for Accreditation.
See information sheet (page 2).

ВЯРНО С

На основание чл. 2
от ЗЗЛД

Version: 1

1 Certificate

A Certificate contains a record of a series of type tests carried out strictly in accordance with a recognized standard. The equipment tested has fulfilled the requirements of this standard and the relevant ratings assigned by the manufacturer are endorsed by KEMA. The Certificate is applicable only to the equipment tested. KEMA is responsible for the validity and the contents of the Certificate.
The responsibility for conformity of any apparatus having the same designation as the one tested rests with the manufacturer. The Certificate contains the essential drawings and a description of the equipment tested.
Detailed rules are given in KEMA's Certification procedure.

2 Report of Performance

A Report of Performance contains a record of one or more tests which have been carried out according to the client's instructions. These tests are not necessarily in accordance with a recognized standard. The test results do not verify ratings of the test object.

KEMA issues three types of Reports of Performance:

***2.1** The tests have been carried out strictly in accordance with …. The apparatus has complied with the relevant requirements.*

This sentence will appear on the front page of a Report of Performance if the tests have been performed in accordance with a recognized standard, but the series of tests does not completely fulfil the requirements for a Certificate of Compliance (for example, if the number of test duties is not a complete series of type tests). The Report contains verified drawings and a description of the equipment tested. Detailed rules are given in KEMA's Certification procedure. The condition of the test object after the tests is assessed and recorded in the Report.

***2.2** The tests have been carried out in accordance with the client's instructions. Test procedure and test parameters were based on ....*

This sentence will appear on the front page of a Report of Performance if the number of tests, the test procedure and the test parameters are based on a recognized standard and related to the ratings assigned by the manufacturer. If the apparatus does not pass the tests such behaviour will be mentioned on the front sheet. Verification of the drawings (if submitted) and assessment of the condition after the tests is only done on the client's request.

***2.3** The tests have been carried out according to the client's instructions.*

This sentence will appear on the front page of a Report of Performance if the tests, test procedure and/or test parameters are not in accordance with a recognized standard.

3 Standards

When reference is made to a standard, and the date of issue is not stated, this applies to the latest issue, including amendments which have been officially published prior to the date of the tests.

4 Official and uncontrolled test documents

The official test documents of KEMA High-Power Laboratory are issued in bound form. Uncontrolled copies may be provided as loose sheets or as a digital file for convenience of reproduction by the client. The copyright has to be respected at all times.

5 Accuracy of measurement

In the table of test results the measured quantities are given in three digits. This method of presentation does not indicate an accuracy. The guaranteed uncertainty in the figures mentioned, taking into account the total measuring system, is less than 5%, unless mentioned otherwise.

6 Qualified by RvA (Dutch Council for Accreditation)

KEMA High-Power Laboratory and High-Voltage Laboratory have been entered in the RvA-register for laboratories under resp. Nrs. L 020 and L 218 for the testing services as defined in the Field of Accreditation.
The accreditation is carried out in accordance with ISO/IEC 17025.

ВЯРНО С ОРИГИНАЛА

TABLE OF CONTENTS:

ВЯРНО С ОРИГИНАЛА

RATINGS ASSIGNED BY THE MANUFACTURER

Voltage	24	kV	
Normal current with fuses	100	A	
Number of poles	3		
Frequency	50	Hz	X
Short-circuit breaking current	20	kA	X
Short-circuit making current	50	kA	X
Transfer current	1300	A	
Take-over current	1300	A	X
Pressure for interruption SF_6 at 20 °C	0,15	MPa	
Pressure for insulation SF_6 at 20 °C	0,15	MPa	

Fuse-link:

Manufacturer	SIBA
Designation	3002243.100 back-up fuse
Voltage	24 kV
Normal current	100 A
Breaking capacity	63 kA
Type of fuse striker	Medium
Certificate number	IPH 1244.0144.1.049, 19 September 2001

Only intended for use in earthed systems

X = This rating has been proved by the tests of this Certificate.

DESCRIPTION OF APPARATUS TESTED

A three-phase switch-fuse combination three-position load break consisting of a switch-disconnector in an SF_6-insulated metal-enclosed switchgear, type 8DJH

Minimum pressure for interruption at 20 °C	0,13	MPa
Maximum pressure for interruption at 20 °C	0,15	MPa

Mechanism:

Stored energy opening (springs, charged manually).
Stored energy closing (springs, charged manually).

Supply voltage closing coil	24	Vd.c.
Supply voltage opening coil	24	Vd.c.

ВЯРНО С ОРИГИНАЛА

TRAVEL RECORDER

Travel recorder attached to main contact shaft. Linear with contact travel.

KEMA

146-07

TYPE TEST CERTIFICATE OF SWITCHING PERFORMANCE

APPARATUS A three-phase three-position load break switch-disconnector for switch-fuse combination purpose in an SF_6-insulated metal-enclosed switchgear, type 8DJH

DESIGNATION 8DJH T **SERIAL No.** TR5

Rated voltage	24 kV (1)	Rated normal current	200 A
Rated short-circuit current	10 kA	Rated frequency	50 Hz

(1) See note on page 5.

MANUFACTURER Siemens AG, PTD M 2,
Frankfurt am Main, Germany

TESTED FOR Siemens AG, PTD M 2,
Frankfurt am Main, Germany

TESTED BY KEMA HIGH-POWER LABORATORY
Utrechtseweg 310 - 6812 AR Arnhem - The Netherlands

DATE(S) OF TESTS 1 and 2 November 2007

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 60265-1, subclause 6.101 (Mainly active load current (100% and 5%), Cable-charging current (100% and 30%)

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard(s) and to justify the ratings assigned by the manufacturer as listed on page 6.

The Certificate applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 206 sheets in total.

This Certificate falls under the scope of the accreditation certificate L 020 of the Dutch Council for Accreditation. See information sheet (page 2).

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Version: 1

1 Certificate

A Certificate contains a record of a series of type tests carried out strictly in accordance with a recognized standard. The equipment tested has fulfilled the requirements of this standard and the relevant ratings assigned by the manufacturer are endorsed by KEMA. The Certificate is applicable only to the equipment tested. KEMA is responsible for the validity and the contents of the Certificate.
The responsibility for conformity of any apparatus having the same designation as the one tested rests with the manufacturer. The Certificate contains the essential drawings and a description of the equipment tested.
Detailed rules are given in KEMA's Certification procedure.

2 Report of Performance

A Report of Performance contains a record of one or more tests which have been carried out according to the client's instructions. These tests are not necessarily in accordance with a recognized standard. The test results do not verify ratings of the test object.

KEMA issues three types of Reports of Performance:

***2.1** The tests have been carried out strictly in accordance with …. The apparatus has complied with the relevant requirements.*

This sentence will appear on the front page of a Report of Performance if the tests have been performed in accordance with a recognized standard, but the series of tests does not completely fulfil the requirements for a Certificate of Compliance (for example, if the number of test duties is not a complete series of type tests). The Report contains verified drawings and a description of the equipment tested. Detailed rules are given in KEMA's Certification procedure. The condition of the test object after the tests is assessed and recorded in the Report.

***2.2** The tests have been carried out in accordance with the client's instructions. Test procedure and test parameters were based on ....*

This sentence will appear on the front page of a Report of Performance if the number of tests, the test procedure and the test parameters are based on a recognized standard and related to the ratings assigned by the manufacturer. If the apparatus does not pass the tests such behaviour will be mentioned on the front sheet. Verification of the drawings (if submitted) and assessment of the condition after the tests is only done on the client's request.

***2.3** The tests have been carried out according to the client's instructions.*

This sentence will appear on the front page of a Report of Performance if the tests, test procedure and/or test parameters are not in accordance with a recognized standard.

3 Standards

When reference is made to a standard, and the date of issue is not stated, this applies to the latest issue, including amendments which have been officially published prior to the date of the tests.

4 Official and uncontrolled test documents

The official test documents of KEMA High-Power Laboratory are issued in bound form. Uncontrolled copies may be provided as loose sheets or as a digital file for convenience of reproduction by the client. The copyright has to be respected at all times.

5 Accuracy of measurement

In the table of test results the measured quantities are given in three digits. This method of presentation does not indicate an accuracy. The guaranteed uncertainty in the figures mentioned, taking into account the total measuring system, is less than 5%, unless mentioned otherwise.

6 Qualified by RvA (Dutch Council for Accreditation)

KEMA High-Power Laboratory and High-Voltage Laboratory have been entered in the RvA-register for laboratories under resp. Nrs. L 020 and L 218 for the testing services as defined in the Field of Accreditation.
The accreditation is carried out in accordance with ISO/IEC 17025.

ВЯРНО С ОРИГИНАЛА

TABLE OF CONTENTS:

ВЯРНО С ОРИГИНАЛА

RATINGS ASSIGNED BY THE MANUFACTURER

Voltage	24	KV (1)	
Normal current	200	A	
Number of poles	3		
Frequency	50	Hz	X
Short-time withstand current	10	kA	
Peak withstand current	25	kA	
Duration of short-circuit	3	s	
Short-circuit making current	25	kA	
Mainly active load breaking current	200	A	X
Cable-charging breaking current	63	A	X
Pressure for interruption SF_6 at 20 °C	0,15	MPa	
Pressure for insulation SF_6 at 20 °C	0,15	MPa	
Supply voltage of closing and opening devices	24	Vd.c.	
Type of switch	backed by fuses		
Class	E3		X

Switch is only intended for use in solidly earthed systems.

X = This rating has been proved by the tests of this Certificate.

(1) On request of the client, the tests have been based on a voltage of 25 kV.

DESCRIPTION OF APPARATUS TESTED

A three-phase three-position load break switch-disconnector for switch-fuse combination purpose in an SF_6-insulated metal-enclosed switchgear, type 8DJH

Minimum pressure for interruption at 20 °C	0,13	MPa
Maximum pressure for interruption at 20 °C	0,15	MPa

Mechanism:
Stored energy opening(springs, charged manually).
Stored energy closing (springs, charged manually).

Supply voltage closing coil	24	Vd.c.
Supply voltage opening coil	24	Vd.c.

TRAVEL RECORDER

Travel recorder attached to main contact shaft. Linear with contact travel.

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0877Fr-1 **Copy No.:** 0 **Contents:** 17 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of cable panel type -K-,bus sectionalizer panel type -S- and ring-main panel type -R-

Designation: Cable panel type -K-

Rated voltage:	24 kV	Rated normal current:	630 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA/ 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 17 July 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.2.6 — DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.2.6

IEC 62271-1: 2007-10, clause 6.2.6 — DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.2.6

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Dielectric tests"

1. Power frequency voltage test 50 Hz; 50 kV - 1 min between phases and to earth
2. Lightning impulse voltage test 1,2/50 µs; ± 125 kV between phases and to earth

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN – PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

Mannheim, 3 September 2008

Deutscher Akkreditierungs Rat DAR

DAT-P-013/92-54

02PE0804

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

PEHLA is founder member of the SHORT-CIRCUIT TESTING LIAISON (STL) which has been established in 1969. STL is a forum for the international cooperation of the testing organisations with the further full members ASTA (UK), CESI (IT), CPRI (IND), ESEF (FR), KEMA (NL), SATS (NO, SE, FI), STLNA (US, CA) and JSTC (JP). In the framework of EC, STL (EU) has been recognised in 1992 by EOTC as agreement group.

PEHLA-Documents

A Type Test Certificate

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A Test Document

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is issued for all other tests which have been carried out according to specifications, standards or "PEHLA-Richtlinien" (PEHLA Guides) 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 test object, 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.

Uncertainty of the measurement systems

The PEHLA - Testing Laboratories apply the PEHLA Guide No. 12 for determining the uncertainties of measurement, based on ENV 13005 (Guide to the expression of uncertainty in measurement). As long as no explicit statements are made, the uncertainties required by the relevant standards have been complied with.

Addresses

Office:
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68219 Mannheim
Germany
Internet: www.pehla.com

Testing Station:
PEHLA-Testing Laboratory
Frankfurt am Main
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Manufacturer:
Siemens AG
E D MV
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Client:
Siemens AG
E D MV 2
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0877Fr-3 **Copy No.:** 0 **Contents:** 20 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of cable panel type -K-, bus sectionalizer panel type -S- and ring-main panel type -R-

Designation: Ring-main panel type -R-

Rated voltage:	24 kV	Rated normal current:	630 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA/ 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 17 July 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.2.6

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.2.6

IEC 62271-1: 2007-10, clause 6.2.6

DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.2.6

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Dielectric tests"

1. Power frequency voltage test 50 Hz; 50 kV - 1 min between phases and to earth and across the contact gap and 60 kV 1 min at the isolating distance
2. Lightning impulse voltage test 1,2/50 µs; ± 125 kV between phases and to earth and across the contact gap and ± 145 kV at the isolating distance

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

Mannheim, 3 September 2008

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

PEHLA is founder member of the SHORT-CIRCUIT TESTING LIAISON (STL) which has been established in 1969. STL is a forum for the international cooperation of the testing organisations with the further full members ASTA (UK), CESI (IT), CPRI (IND), ESEF (FR), KEMA (NL), SATS (NO, SE, FI), STLNA (US, CA) and JSTC (JP). In the frame-work of EC, STL (EU) has been recognised in 1992 by EOTC as agreement group.

PEHLA-Documents

A Type Test Certificate

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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.

Uncertainty of the measurement systems

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Addresses

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Internet: www.pehla.com

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Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Manufacturer:
Siemens AG
E D MV
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Client:
Siemens AG
E D MV 2
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0877Fr-2 **Copy No.:** 0 **Contents:** 20 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of cable panel type -K-, bus sectionalizer panel type -S- and ring-main panel type -R-

Designation: bus sectionalizer panel type -S-

Rated voltage:	24 kV	Rated normal current:	630 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA/ 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 17 July 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.2.6

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.2.6

IEC 62271-1: 2007-10, clause 6.2.6

DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.2.6

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Dielectric tests"

1. Power frequency voltage test 50 Hz; 50 kV - 1 min between phases and to earth and across the contact gap and 60 kV 1 min at the isolating distance
2. Lightning impulse voltage test 1,2/50 µs; ± 125 kV between phases and to earth and across the contact gap and ± 145 kV at the isolating distance

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

Mannheim, 3 September 2008

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

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Addresses

Office:	PEHLA-Geschäftsstelle Hallenweg 40 68219 Mannheim Germany Internet: www.pehla.com
Testing Station:	PEHLA-Testing Laboratory Frankfurt am Main Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Manufacturer:	Siemens AG E D MV Carl-Benz-Straße 22 60386 Frankfurt am Main Germany
Client:	Siemens AG E D MV 2 Carl-Benz-Straße 22 60386 Frankfurt am Main Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Confirmation

Report No.: 08120Fr-0 **Copy No.:** 0 **Contents:** 2 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Serial No.: TM 4
Drawing No.: 500-8004.9

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 24 September 2008

Applied test specifications:

IEC 62271-102: 2003-08 clause 6.105
DIN EN 62271-102: 2003-10 (VDE 0671 Teil 102) Abschnitt 6.105

Tests performed:

Type test „Tests to verify the proper function of the position-indicating device"
The tests were carried out on the transformer feeder T1

- Test on the power resp. position-indicating kinematic chain of the disconnector with independent manual operation
- Test on the power resp. position-indicating kinematic chain of the earthing-switch with independent manual operation

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

Detailed results will be documented in a separate document.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

Frankfurt am Main, 24 September 2008

50PE0804

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

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Manufacturer:
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Client:
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Energy Sector
E D MV 2
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60386 Frankfurt am Main
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ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08122Fr-1 **Copy No.:** 0 **Contents:** 13 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 23 September 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.7.1	DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.7.1
IEC 62271-1: 2007-10, clause 6.7.1	DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.7.1
IEC 60529: 2003-01	DIN EN 60529 (VDE 0470 Teil 1): 2000-09

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Verification of the IP coding"
Protection of the enclosure of the Ring-main transformer panel block type RRT against access to hazardous parts and protection against solid foreign objects, degree of protection IP3X.

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

Mannheim, 20 March 2009

02PE0804

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

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STL-Member

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60386 Frankfurt am Main
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ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08122Fr-2 **Copy No.:** 0 **Contents:** 13 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 23 September 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.7.1	DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.7.1
IEC 62271-1: 2007-10, clause 6.7.1	DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.7.1
IEC 60529: 2003-01	DIN EN 60529 (VDE 0470 Teil 1): 2000-09

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Verification of the IP coding"
Protection of the enclosure of the ring-main transformer panel block type RRT against access to hazardous parts and protection against solid foreign objects, degree of protection IP2X.

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜР ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

РНО С
ГИНАЛА

Mannheim, 20 March 2009

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

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Client:
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60386 Frankfurt am Main
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ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 08121Fr **Copy No.:** 0 **Contents:** 12 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH

Designation: Ring-main transformer panel block type RRT

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 12 and 23 September 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.8	DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.8
IEC 62271-1: 2007-10, clause 6.8	DIN IEC 62271-1 (VDE 0671 Teil 1) Entwurf: 2004-12, Abschnitt 6.8

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type test "Tightness tests before and after mechanical operation test"

1. Tightness test of gas-filled compartment before the mechanical operation test
2. Mechanical operation tests with the ring-cable feeder R1 and R2 and with the transformer feeder T1 (1000 CLOSE - OPEN and 1000 EARTHED - OPEN operations)
3. Tightness test of gas-filled compartment after the mechanical operation test

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

Mannheim, 04 February 2009

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

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ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0879Fr **Copy No.:** 0 **Contents:** 9 **Sheets**

Test object: Gas – Insulated Switchgear Type 8DJH

Designation: Switchgear vessel of the transformer panel type T

Rated voltage:	up to 24 kV	Rated normal current:	180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	up to 62,5 kA	Rated short-time withstand current:	up to 25 kA	Rated duration of short-circuit:	up to 3 s

1) The rated normal current of the transformer depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 30 October 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.103

DIN EN 62271-200: 2004-10 (VDE 0671 Teil 200), Abschnitt 6.103

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type Test "Pressure withstand test for gas-filled compartments with pressure relief devices"

- The relative pressure was increased up to 110 kPa in order to reach a value of 1,3 times the design pressure of 85 kPa of the compartment for a period of 1 min. The pressure relief device did not operate.
- Then the pressure should have been increased up to a maximum value of 255 kPa (e.g. 3 times the design pressure of 85 kPa). The pressure relief device operated, as designed by the manufacturer, below this value. The reached opening overpressure was 227 kPa.

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN – PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

Mannheim, 03 November 2008

02PE0804

Deutscher Akkreditierungs Rat DAR

DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

PEHLA is founder member of the SHORT-CIRCUIT TESTING LIAISON (STL) which has been established in 1969. STL is a forum for the international cooperation of the testing organisations with the further full members ASTA (UK), CESI (IT), CPRI (IND), ESEF (FR), KEMA (NL), SATS (NO, SE, FI), STLNA (US, CA) and JSTC (JP). In the frame-work of EC, STL (EU) has been recognised in 1992 by EOTC as agreement group.

PEHLA-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 and STL Guides valid at the time of the test. For these tests the test object 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 and STL Guides valid at the time of test. For these tests the test object 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 or "PEHLA-Richtlinien" (PEHLA Guides) 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 test object, 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.

Uncertainty of the measurement systems

The PEHLA - Testing Laboratories apply the PEHLA Guide No. 12 for determining the uncertainties of measurement, based on ENV 13005 (Guide to the expression of uncertainty in measurement). As long as no explicit statements are made, the uncertainties required by the relevant standards have been complied with.

Addresses

Office: PEHLA-Geschäftsstelle
Hallenweg 40
68219 Mannheim
Germany
Internet: www.pehla.com

Testing Station: PEHLA-Testing Laboratory
Frankfurt am Main
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Manufacturer: Siemens AG
E D MV
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Client: Siemens AG
E D MV 2
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0883Fr **Copy No.:** 0 **Contents:** 24 **Sheets**

Test object: Gas - Insulated Switchgear Type 8DJH
consisting of transformer panel type -T- and cable panel type -K-

Designation: Transformer panel type -T-

Rated voltage:	24 kV	Rated normal current:	630 A / 180 A 1	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA	Rated short-time withstand current:	21 kA	Rated duration of short-circuit:	3 s

1) The rated normal current of the transformer feeder depends on the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Frankfurt am Main

Date of test: 23 July 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.106

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.106

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type Test "Internal arcing test" of the gas filled compartment

Testing under conditions of arcing due to an internal fault according classification IAC AFLR 21 kA 1 s.

Three-phase arc initiation within the switchgear vessel with a peak current of I_p = 54,0 kA and a short-circuit current of I_k = 21,7 kA – 1,00 s (I_k = 21,0 kA – 1,03 s accordingly).

(Continued on sheet 3)

Test results:

The assessment of the effects under condition of arcing due to an internal fault corresponding to the criteria 1 to 5 of the above mentioned test specification is compiled on sheet 3.

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN

На основание чл. 2
от ЗЗЛД

ВЕРНО С ОРИГИНАЛА

Mannheim, 18 August 2008

Deutscher Akkreditierungs Rat
DAR
DAT-P-013/92-54

Notes

Accreditation

The PEHLA-Testing Laboratory Frankfurt am Main has been approved by the DATech (German accreditation body for technology) according to EN ISO/IEC 17025 for tests in the field of high-voltage switchgear and controlgear and power engineering equipment (Registration-No. DAT-P-013/92-54).

STL-Member

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PEHLA-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 and STL Guides valid at the time of the test. For these tests the test object must be clearly identified by technical description, drawings and additional specifications.

A Test Document

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A Test Report

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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.

Uncertainty of the measurement systems

The PEHLA - Testing Laboratories apply the PEHLA Guide No. 12 for determining the uncertainties of measurement, based on ENV 13005 (Guide to the expression of uncertainty in measurement). As long as no explicit statements are made, the uncertainties required by the relevant standards have been complied with.

Addresses

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Hallenweg 40
68219 Mannheim
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Internet: www.pehla.com

Testing Station:
PEHLA-Testing Laboratory
Frankfurt am Main
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Manufacturer:
Siemens AG
Energy Sector
E D MV
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

Client:
Siemens AG
Energy Sector
E D MV 2
Carl-Benz-Straße 22
60386 Frankfurt am Main
Germany

ВЯРНО С ОРИГИНАЛА

Test performed

(Continuation from sheet 1)

The test on the medium voltage switchgear was performed for accessibility type A (restricted to authorized personal only).

The test of the free-standing panel took place in a room mock-up with an effective ceiling height of 2,00 m. The distance between the rear wall of the switchgear and the room mock-up was 0,80 m, between the top of the switchgear and the ceiling of the room mock-up was 0,60 m and between the right lateral wall and the room mock-up was 0,10 m.

Vertical indicators were arranged at a distance of 0,30 m.
The Indicators were arranged at three sides of the switchgear (front, left lateral and rear side), covering 40% to 50% of the area.

The three-phase infeeding of the current was in the cable connection compartment of cable panel type -K- via cables 240 mm^2.

Three-phase arc initiation was at the frontside fuse bushings within the gas filled compartment.

The pressure relief effected downwards into the cable basement mock-up.

The opening for the manual operation for the mechanism of the load-break switch function was in open position.

Test results

(Continuation from sheet 1)

Test-no. 0883Fr / 03

Criteria according to IEC 62271-200		fulfilled (yes/no)
No.1:	Correctly secured doors and covers do not open	yes
No.2:	No fragmentation of the enclosure occurs and no parts more than 60 g flow away	yes
No.3:	Arcing does not cause holes in the accessible sides up to a height of 2 m	yes
No.4:	Indicators do not ignite due to the effect of hot gases	yes
No.5:	The enclosure remains connected to its earthing point	yes

Test results: The test has been passed.

Achieved class of the gas filled compartment: IAC AFLR 21 kA 1 s.

ВЯРНО С ОРИГИНАЛА

PEHLA

GESELLSCHAFT FÜR ELEKTRISCHE HOCHLEISTUNGSPRÜFUNGEN
Member of the SHORT-CIRCUIT TESTING LIAISON (STL)

Test Document

Report No.: 0813Bm **Copy No.:** 1 **Contents:** 22 Sheets

Test object: Gas-insulated switchgear type 8DJH,
consisting of transformer panel type -T- and cable panel type -K-

Designation: Transformer panel type -T-

Rated voltage:	24 kV	Rated normal current:	180 A 1)	Rated frequency:	50 Hz / 60 Hz
Rated peak withstand current:	52,5 kA / 54,6 kA 2)	Rated short-time withstand current:	21 kA 2)	Rated duration of short-circuit:	3 s 2)

1) The rated normal current of the transformer panel depends on the type of the HV HRC fuse.
2) The peak withstand current, the short-time withstand current and the duration of short-circuit is limited by the type of the HV HRC fuse.

Manufacturer: Siemens AG, E D MV

Client: Siemens AG, E D MV 2

Testing station: PEHLA-Testing Laboratory Berlin-Marzahn

Date of test: 13 August 2008

Applied test specifications:

IEC 62271-200: 2003-11, clause 6.106

DIN EN 62271-200 (VDE 0671 Teil 200): 2004-10, Abschnitt 6.106

According to STL Objectives and Operating Principles PEHLA issues a Test Document following exclusively the above mentioned standards and the STL Guides wherever applicable.

Tests performed:

Type Test "Internal arcing test" of the fuse-protected cable compartment
Testing under conditions of arcing due to an internal fault according classification
IAC AFLR 21 kA 1 s.
Two-phase arc initiation at the bushings with plug-in contact of phase L1 and L2 within the cable connection compartment with inserted HV HRC fuse type Siemens 3GD1 420-4D (24 kV / 100 A) with a peak current of I_p = 45,8 kA and a short-circuit current of I_k = 18,3 kA – 1,00 s at a test voltage of 24 kV (I_k = 18,3 kA = 21 kA x 0,87 – 1,00 s accordingly).
(Continued on sheet 3)

Test results:

The above mentioned test object has passed the tests performed in accordance with the applied test specifications.

GESELLSCHAFT FÜR ELEKTRISCHE

На основание чл. 2
от ЗЗЛД

Mannheim, 25 März 2009

50PE0402

Deutscher Akkreditierungs Rat
DAR
DAT-P-019/92-63

SIEMENS

ДЕКЛАРАЦИЯ

Долуподписаните Орлин Пламенов Александров, На основание чл. 2 от ЗЗЛД изд. на На основание чл. 2 от ЗЗЛД качеството си на Управител, и Елина Вардева-Николова, ЕГН: На основание чл. 2 от ЗЗЛД представител на Сименс ЕООД, дружество регистрирано в Търговския регистър на Агенцията по вписванията с ЕИК 121746004, със седалище и адрес на управление: София 1309, Община Столична, ул. „Кукуш" № 2, ДДС номер BG 121746004, доставчик на ПС ЕЛЕКТРИК ООД във връзка с „открита" по вид процедура с предмет: „Доставка и монтаж на бетонови комплектни трансформаторни постове (БКТП)", РЕФ. № PPD18-063, за нуждите на "ЧЕЗ РАЗПРЕДЕЛЕНИЕ БЪЛГАРИЯ" АД,

ДЕКЛАРИРАМЕ, ЧЕ:

Предвидените за доставка комплектни разпределителни уредби Siemens, тип 8DJH с коммутационна апаратура в SF_6 изолация и вложените в тях материали подлежат на рециклиране.

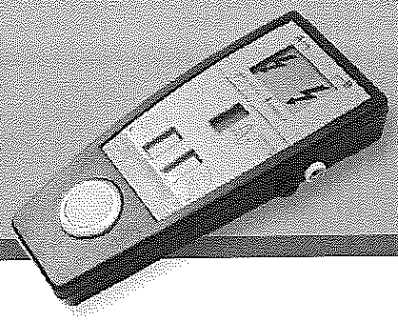
Дата: 08.08.2018 г.

На основание чл. 2
от ЗЗЛД

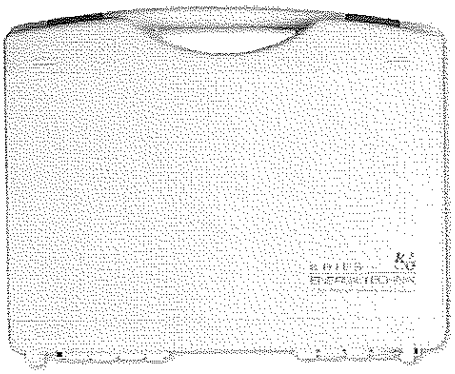
ВЯРНО С ОРИГИНАЛА

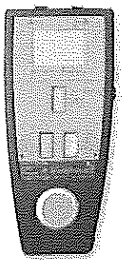
CAP-Phase

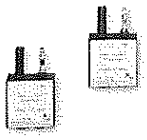
Universal Tester

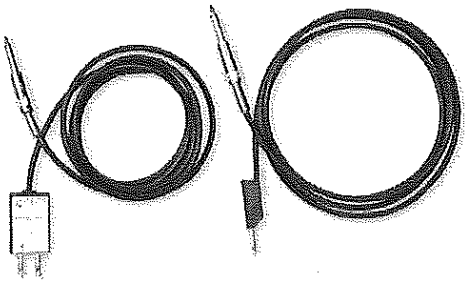


- **Combined phase comparator and voltage detector**
  Universal Tester for voltage detection, phase comparison and phase sequence test at capacitive HR- and LRM interfaces according to IEC 61243-5.
- **No battery required**
  Self-powered microprocessor technology
- **Phase sequence indication**
- **Maintenance test**
  For capacitive HR or LRM interfaces
- **Integrated self test**
  Covering Universal Tester and test leads.
- **Scope of supply**
  Universal-Tester, two test leads (length 2 m), two HR/LRM adaptors, carrying case









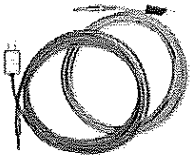
CAP-Phase

Universal Tester

Accessories

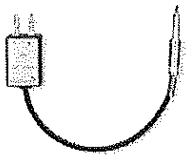
Padded shoulder bag
Part number: 3501101

Test lead set 2 x 4,5 m
Part number: 2500344



Universal adapter cable set
Adapter cables for bushings with not standardized distances of interfaces
Part number: 2500063

Test lead 20 cm
Short test lead for easy handling in case of voltage detection and interface testing
Part number: 2500356



Technical data

Applied standard	IEC 61243-5 (voltage detecting and phase comparison)
Classification of phase comparator according to standard	UPC
Dimensions Universal	
Test leads	2 x 2 m
Dimensions carrying case	l x w x d = 275 x 340 x 83 mm
Auxiliary voltage	not required
Protection class	IP 54
Operating temperature	-25°C to +55°C
Storage temperature	-30°C to +70°C
Item No.	2500623

ВЯРНО С ОРИГИНАЛА

Kries-Energietechnik GmbH & Co. KG

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D-71334 Waiblingen

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Fax +49 7151 96932- 160

service@kries.com
www.kries.com

11.

PS ELECTRIC®

„ПС електрик“ ООД

Оферта

за устройство за уеднаквяване на фазовия ред

Предлагаме Устройство за уеднаквяване на фазовия ред Cap Phase 50 Hz, произход Германия при следните условия:

1. Единична цена без включен ДДС- 1 400.00 лева
2. Срок за доставка след заявка- 30 работни дни.

31.07.2018 г. ....

На основание чл. 2
от ЗЗЛД

Централен офис адрес: 9700 Шумен, бул. Мадара 12; тел: +359 54 87 44 99; факс: +359 54 87 45 00
Офис София адрес: 1000 София, бул. Витоша 129; тел: +359 2 952 24 05; факс: +359 2 952 67 20
e-mail: office@pselectric.bg web: www.pselectric.bg

Задвижващи механизми за трипозиционния превключвател, оборудване (опция)

Моторен задвижващ механизъм (опция)

Ръчните задвижващи механизми на КРУ 8DJH може да бъдат снабдени с моторни задвижващи механизми за трипозиционния мощностен разединител. Възможно е дооборудване.

Работни напрежения за моторните задвижващи механизми:

- 24, 48, 60, 110, 220 V DC
- 110 и 230 V AC, 50/60 Hz
- мощност на мотора: макс. 80 W/80 VA.

Задействане:

- местно задействане чрез въртящ управляващ ключ с мигновен контакт (опция)
- дистанционно задействане (стандартно), изведено на клема.

Изключвателна бобина (опция)
(f-release)

Механизмите със заредена пружина може да бъдат снабдени с изключвателна бобина. Дистанционно електрическо изключване на трипозиционния мощностен разединител е възможно чрез магнитната бобина на изключвателната бобина, напр. изключване по прегряване на трансформатора.

За избягване на термично претоварване на изключвателната бобина в случай на непрекъснат сигнал, който може да бъде приложен, изключвателната бобина се изключва чрез помощен контакт, който е механично съединен с трипозиционния мощностен разединител.

Помощен контакт (опция)

Като опция всеки задвижващ механизъм на трипозиционния мощностен разединител може да бъде снабден с помощен контакт за индикация на положението:

- функция на мощностния разединител:
  ВКЛЮЧЕНО и ИЗКЛЮЧЕНО: 1 NO + 1 NC + 2 превключващи контакта
- функция на заземяващия нож:
  ВКЛЮЧЕНО и ИЗКЛЮЧЕНО: 1 NO + 1 NC + 2 превключващи контакта.

Технически данни на помощния контакт

Изключвателна способност

AC работа при 40 Hz до 60 Hz		DC работа		
Работно напрежение	Работен ток	Работно напрежение	Работен ток Резис.	Индуктив., T = 20 ms
V	A	V	A	A
до 230	10	24	10	10
		48	10	9
		60	9	7
		110	5	4
		240	2,5	2

Номинална комутационна способност

Номинално изолационно напрежение	250 V AC / DC
Група по изолация	C по VDE 0110
Продължителен ток	10 A
Включвателна способност	50 A

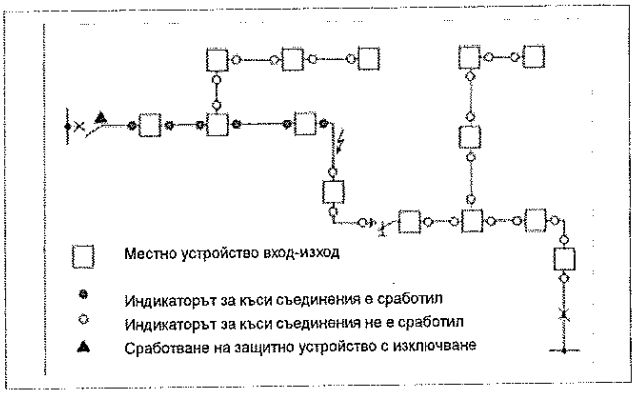
Съкращения:
NO = нормално отворен контакт
NC = нормално затворен контакт

Оборудване за индикация и измерване

Индикатори за късо/земно съединение марка Horstmann

Изводите „вход-изход", кабелните изводи, изводите „охрана на трансформатор" и изводите с прекъсвач може като опция да бъдат снабдени с индикатори за къси съединения или земни съединения с различни конструкции.

Характерните особености на оборудването са показани в таблицата на стр. 51.
Индикаторите за къси съединения и земни съединения намаляват престоите на енергийната система чрез ограничаване на местата на повредите в системи средно напрежение.



Индикаторите за късо/земно съединение може да се използват в радиални системи и в открито управлявани пръстеновидни системи. В системи със заземяване през активно-реактивно съпротивление и системи с директно заземяване всеки индикатор за къси съединения може да се използва и като индикатор за земни съединения.

Основни функции

- регулируеми прагове на сработване
- фазово селективна индикация на повреди
- връщане в изходно положение на индикацията на повреди:
- ръчно, автоматично, дистанционно
- дистанционна индикация с релейни контакти.

Измервателна функция с ComPass A

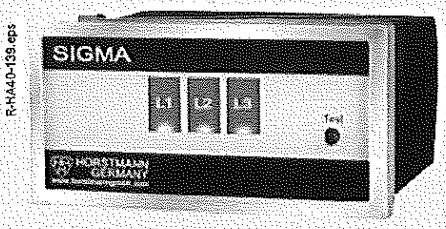
- измерване и индикация на фазови и земни токове
- предаване на измерваните стойности, индикации на повреди и събития чрез RS485/Modbus.

ComPass B с други функции

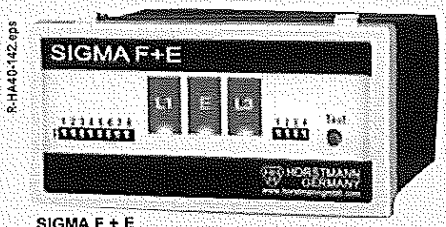
- индикация за къси съединения и земни съединения в зависимост от посоката
- откриване на напрежение чрез система за откриване на напрежение тип WEGA. Това осигурява други измервани стойности, като например:

– фазово напрежение и напрежение на изместване
– активна, реактивна и привидна мощност
– фактор на мощността cos φ
– посока на потокоразпределението на товара

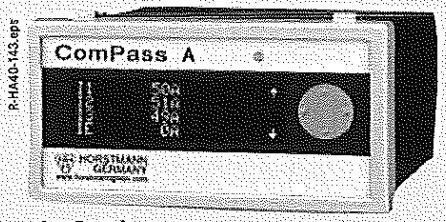
- сигнализация, индикация за понижено и повишено напрежение
- посочно/непосочно откриване на повреди за всички видове обработване на неутралата.



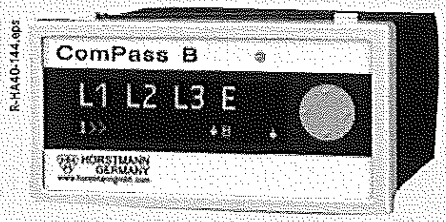
SIGMA



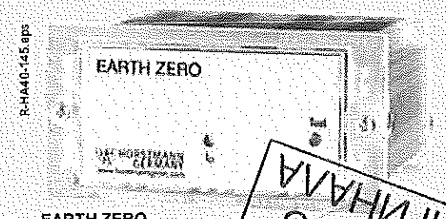
SIGMA F + E



ComPass A



ComPass B



EARTH ZERO

Други типове и информация може да се получат директно от производителя на адрес www.horstmanngmbh.com.

Оборудване за индикация и измерване

Индикатори за късо/земно съединение Horstmann	ALPHA M	ALPHA E	SIGMA	SIGMA F+E	ComPass A	ComPass AP	ComPass B	ComPass BP	ЗЕМЯ/ ЗЕМЯ НУЛА
Функция									
Индикация за къси съединения	x	x	x	x	x	x	x	x	
Индикация за земни съединения				x	x	x	x	x	x
Функция за земно съединение (система със заземяване през активно-реактивно съпротивление	x	x	x	x	x	x	x	x	x
Индикация за посока, късо/земно съединение							x	x	
Индикация за понижено и повишено напрежение							x	x	
Приложими за следните опции на зануляване									
През активно-реактивно съпротивление	x	x	x	x	x	x	x	x	x
Директно	x	x	x	x	x	x	x	x	x
Изолирано	x	x	x	x	x	x	x	x	
Компенсирано	x	x	x	x	x	x	x	x	
Ток на сработване									
Ток на късо съединение	400, 600, 800, 1000 A		200, 300, 400, 600, 800, 1000 A [4]		50-2000 A (стъпки от 50 A)				
Ток на земно съединение				20, 40, 60, 80, 100, 120, 160 A	1-1000 A (стъпки от 1 A)				25, 50, 75, 100 A [7]
Локализация на импулса						x		x	
Време на сработване									
Ток на късо съединение	≤ 100 ms		40, 80 ms [7]		40 ms < t < 60 s				
Ток на земно съединение				80, 160 ms	40 ms < t < 60 s				80, 160 ms [7]
Връщане в изходно положение									
Ръчно	x	x	x	x	x	x	x	x	x
Автоматично		x	x	x	x	x	x	x	x
Дистанционно		x	x	x	x	x	x	x	x
Дистанционна индикация									
Плъзгащ контакт	регулируем		регулируем			регулируем			регулируем
Фиксиран контакт	регулируем		регулируем			регулируем			регулируем
Интерфейс									
RS485 / MODBUS					x	x	x	x	
Захранване									
Литиева батерия		x	x	x	x	x	x	x	x
Външно помощно напрежение			x [5]	x [5]	x	x	x	x	x [5]
Токови входове									
Фазов ток	3	3	3	2 / 3 [6]	3	3 (2) [1]	3 (2) [1]	3 (2) [1]	
Сумарен ток				1 (0) [6]	0 [1]	0 (1) [1]	0 (1) [1]	0 (1) [1]	1
Напреженови входове									
Чрез WEGA 1.2C / WEGA 2.2C							3	3	
Измервателна функция									
Ток					x [2]	x [2]	x [2]	x [2]	
Напрежение							x	x	
Посока на потокоразпределението на товара							x		
Cos φ							x		
Честота					x	x	x		
Активна мощност							x	x	
Привидна мощност							x	x	
Реактивна мощност							x	x	
Релейни изходи									
Безпотенциални	1	1	1	3	4 [3]	4 [3]	4 [3]	4 [3]	1
Двоични входове									
Брой		1	2 (тест + връщане в изходно положение)			1 [3]	1 [3]	1 [3]	1 [3] 1

1) Измервателен датчик 3+0 (пресмята се сумарният ток), измервателен датчик 2+1 (пресмята се фаза L2)
2) Моментни стойности: Ø 15 min, макс. 24 h, макс. 7 дни, макс. 365 дни, функция подчинена стрелка
3) Свободно програмируем
4) Настройваемо саморегулиране, 2000 A опция
5) Опция
6) Няма пресмятане на липсващата фаза или сумарния ток
7) Възможни са други настройки като опция

Оборудване за индикация и измерване

Индикатори за късо съединение/късо съединение към земя и индикатори за земно съединение марка Kries

Изводите „вход-изход", кабелните изводи, изводите „охрана на трансформатор" и изводите с прекъсвач може като опция да бъдат снабдени с индикатори за къси съединения, къси съединения към земя или земни съединения с различни конструкции.
Характерните особености на оборудването са показани в таблицата на стра. 53.
Трите най-обичайни типа откази в системи средно напрежение са земни съединения в кабели и КРУ, повреди и претоварвания на разпределителни трансформатори, както и къси съединения в кабели и КРУ. За бързо локализиране на повредата и минимизиране на престоите се използват електронни индикатори на повреда със следните свойства:

- селективно откриване на повреди и по такъв начин минимизиране на престоите
- надеждно откриване на повреди чрез електронно получаване на измерваните стойности
- дистанционна индикация на събития на повреди и измервани стойности.

1. Индикаторите за къси съединения (IKI-20, IKI-50) се използват за селективна локализация на многофазни повреди в разпределителни системи. Колкото по-последователно се монтират те в устройства вход-изход, толкова по-селективно ще бъде разграничена кабелната повреда и ще бъде изключена.

Ако индикацията за повреди има за резултат дистанционна комутационна операция, препоръчително е да се осигури система за откриване на повреди върху всеки комутируем извод, така че да трябва да се задействат само мощностните разединители, разположени близо до повредата.

2. Индикатори за земни съединения

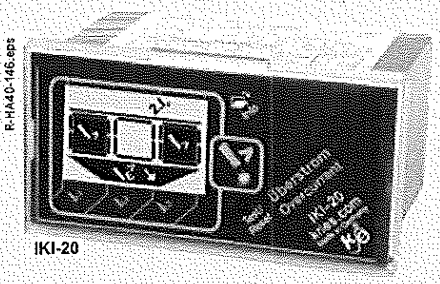
а Индикаторите за късо съединение към земя се използват за еднофазно откриване на късо съединение към земя в системи със заземяване през активно-реактивно съпротивление или системи с кратко заземяване през активно-реактивно съпротивление.
Откриването на късо съединение към земя вече е интегрирано в повечето индикатори за къси съединения или е на разположение като отделно устройство. **(IKI-10light-P)**

б В резонансно заземени или изолирани системи индикаторите за земни съединения се използват за откриване на еднофазни фазови повреди.
Може да се изберат следните процедури:
Локализация на импулса, ватметрични процедури и процедури с плъзгащ контакт.

3. Комбинираните индикатори за къси и земни съединения (IKI-20PULS, IKI-50) позволяват откриване на еднофазни и многофазни повреди. Тук откриването на късо съединение може да се комбинира с различни методи за откриване на земни съединения (вижте 2б).

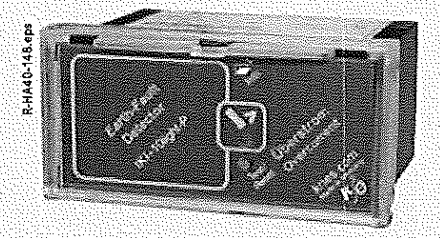
4. Устройствата с откриване на посоката (IKI-50) предлагат еднозначна индикация на повредите и информация за посоката дори в затворено управлявани пръстени и в енергийни системи с децентрализирано захранване. За определяне на посоката се изискват фазовите напрежения. Те може да се получат от съществуваща интегрирана система за откриване на напрежение тип CAPDIS и да бъдат предоставени на посочния индикатор за повреди.

5. Комбинираните индикатори за повреди и потокоразпределение на товара (IKI-50) позволяват – в паралел с откриването на повреди – определянето на измерваните стойности за всички съответни измервани величини средно напрежение, включително посоката.



IKI-20

IKI-50



Други типове и информация може да се получат директно от производителя на адрес www.kries.com.

Оборудване за индикация и измерване

Индикатори за късо/земно съединение Kries	IKI-20B	IKI-20T	IKI-20U	IKI-20PULS	IKI-50_1F	IKI-50_1F_EW_ PULS	IKI-50_2F	IKI-50_2F_EW_ PULS	IKI-10-light-P
Функция									
Индикация за къси съединения	x	x	x	x	x	x	x	x	
Индикация за земни съединения				x	x	x	x	x	
Индикация за къси съединения към земя [5]	x	x	x		x	x	x	x	x
Индикация за посока					x	x	x	x	
Приложими за следните опции на зануляване									
През активно-реактивно съпротивление	x	x	x		x	x	x	x	x
Директно	x	x	x		x	x	x	x	x
Изолирано	x	x	x		x	x	x	x	
Компенсирано	x	x	x	x	x	x	x	x	
Ток на сработване									
Ток на късо съединение	100, 200, 400, 600, 800, 1000, 2000					100-1000 A (стъпки от 100 A)			
Ток на земно съединение						4-30 A (стъпки от 1 A)			
Ток на късо съединение към земя [5]		40, 80, 100. 150				40-200 A (стъпки от 10 A)			20, 40, 60, 80
Локализация на импулса				x		x		x	
Време на сработване									
Ток на късо съединение		60, 80, 150, 200				60 – 1600 ms			
Ток на късо съединение към земя [5]		60, 80, 150, 200				60 – 1600 ms			70, 250 ms
Ток на земно съединение						400 – 3000 ms			
Връщане в изходно положение									
Ръчно	x	x	x	x	x	x	x	x	x
Автоматично	x	x	x	x	x	x	x	x	x
Дистанционно	x	x	x	x	x	x	x	x	x
Дистанционна индикация									
Плъзгащ контакт		регулируем				регулируем			регулируем
Фиксиран контакт		регулируем				регулируем			регулируем
Интерфейс									
RS485 / MODBUS					x	x	x	x	
Захранване									
Литиева батерия	x								x
Външно помощно напрежение		x	x	x	Буферирано в продължение на 6 h от вътрешен кондензатор				x
Токови входове									
Фазов ток	3	3	3	3	3	3	6	6	
Сумарен ток	1	1	1	1	1 [1]	0 [2]	0 [2]	0 [2]	1
Напреженови входове									
Чрез CAPDIS + Y-кабел					3	3	6	6	
Измервателна функция									
Ток					x [4]	x [4]	x [4]	x [4]	
Напрежение					x [4]	x [4]	x [4]	x [4]	
Посока на потокоразпределението на товара					x [4]	x [4]	x [4]	x [4]	
Cos φ					x [4]	x [4]	x [4]		
Честота					x [4]	x [4]	x [4]		
Активна мощност					x [4]	x [4]	x [4]		
Привидна мощност					x [4]	x [4]	x [4]	x [4]	
Реактивна мощност					x [4]	x [4]	x [4]	x [4]	
Релейни изходи									
Безпотенциални	1 – 3	1 – 3	1 – 3	1 – 3	4	4	4	4	1
Захранвани от вътрешен кондензатор					2 [3]	2 [3]	2 [3]	2 [3]	
Двоични входове									
Брой		2 (тест + връщане в изходно положение)			4	4	4	4	

1) Като опция за ватметрично откриване на посоката на земното съединение
2) Създаване на сумиран сигнал чрез 3 трансформатора, монтирани около проводника
3) 0,1 Ws, 24 V DC
4) Моментна стойност, средна стойност и мин./макс. стойност, посочна
5) Късо съединение към земя = земно съединение в система със заземяване през активно-реактивно съпротивление

SIEMENS

ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ

С настоящото потвърждаваме, че комплектна разпределителна уредба за средно напрежение тип 8DJH, е производство на SIEMENS AG Германия.

Оборудването е проектирано, произведено и изпитано съгласно актуалните към датата на производство IEC и VDE/ISO стандарти.

Данни за продукта:

Наименование: Комплектна разпределителна уредба за средно напрежение (КРУ):

▪ **Тип**	8DJH
▪ **Производство по СК**	DIN EN ISO 9001; DIN EN ISO 14001; BS OHSAS 18001;
▪ **Рег. No. на сертификата**	212006-2016-AHSO-GER-DAkkS
▪ **Валидност**	14.09.2018

ВЯРНО С ОРИГИНАЛА

ПС електрик ООД

SIEMENS

- **Съответствие с IEC и EN стандарти:**

		IEC standard	VDE standard
Switchgear	8DJH	IEC 62 271-1	VDE 0671-1
		IEC 62 271-200	VDE 0671-200
Devices	Circuit-breakers	IEC 62 271-100	VDE 0671-100
	Disconnectors and earthing switches	IEC 62 271-102	VDE 0671-102
	Switch-disconnectors	IEC 62 271-103	VDE 0671 -103
	Switch-fuse combination	IEC 62 271-105	VDE 0671-105
	HV HRC fuses	IEC 60 282-1	VDE 0670-4
	Voltage detecting systems	IEC 61 243-5	VDE 0682-415
Degree of protection	IP-Code	IEC 60 529	VDE 0470-1
Insulation	-	IEC 60 071	VDE 0111
Installation, erection	General regulations of high voltage switchgear, Earthing of high voltage switchgear	IEC 61 936-1	VDE 0101-1
		--	VDE 0101-2

Заключение: Оборудването е типово изпитано и подлежи на рутинни изпитания преди експедиция от завода производител и отговаря на световните стандарти.

ИЗДАВА

Направление: Енергиен мениджмънт – "СИМЕНС" ЕООД

На основание чл. 2
от ЗЗЛД

/ Мениджър продажби Ср.Н., напр. Енергиен мениджмънт/

ВЯРНО С ОРИГИНАЛА

ПС електрик ООД

SIEMENS

Сертификат за качество

С настоящото потвърждаваме, че комплектна разпределителна уредба за средно напрежение тип 8DJH, е производство на SIEMENS AG Германия.

Оборудването е проектирано, произведено и изпитано съгласно актуалните към датата на производство IEC и VDE/ISO стандарти.

Данни за продукта:

Наименование: Комплектна разпределителна уредба за средно напрежение (КРУ):

▪ **Тип**	8DJH
▪ **Производство по СК**	DIN EN ISO 9001; DIN EN ISO 14001; BS OHSAS 18001;
▪ **Рег. No. на сертификата**	212006-2016-AHSO-GER-DAkkS
▪ **Валидност**	14.09.2018

ВЯРНО С ОРИГИНАЛА

SIEMENS

- **Съответствие с IEC и EN стандарти:**

		IEC standard	VDE standard
Switchgear	8DJH	IEC 62 271-1	VDE 0671-1
		IEC 62 271-200	VDE 0671-200
Devices	Circuit-breakers	IEC 62 271-100	VDE 0671-100
	Disconnectors and earthing switches	IEC 62 271-102	VDE 0671-102
	Switch-disconnectors	IEC 62 271-103	VDE 0671 -103
	Switch-fuse combination	IEC 62 271-105	VDE 0671-105
	HV HRC fuses	IEC 60 282-1	VDE 0670-4
	Voltage detecting systems	IEC 61 243-5	VDE 0682-415
Degree of protection	IP-Code	IEC 60 529	VDE 0470-1
Insulation	-	IEC 60 071	VDE 0111
Installation, erection	General regulations of high voltage switchgear, Earthing of high voltage switchgear	IEC 61 936-1	VDE 0101-1
		--	VDE 0101-2

Заключение: Оборудването е типово изпитано и подлежи на рутинни изпитания преди експедиция от завода производител и отговаря на световните стандарти.

ИЗДАВА

Направление: Енергиен мениджмънт – "СИМЕНС" ЕООД

На основание чл. 2
от ЗЗЛД

/ Мениджър продажби Ср.Н., напр. Енергиен мениджмънт/

ВЯРНО С ОРИГИНАЛА

14

SIEMENS

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Интернет: www.siemens.bg

Дата: 08.08.2018

Относно: Препоръки от производителя за постигане на необходимата сеизмична устойчивост на КРУ 8DJH за обществена процедура с квалификационна система с референтен номер PPD18-063 "Доставка и монтаж на бетонови комплектни трансформаторни постове (БКТП)".

Уважаеми г-н Маринов,

Във връзка със зададените от Вас и вашия екип въпроси по оборудването, оферираното от Сименс за процедура с референтен номер PPD18-063 "Доставка и монтаж на бетонови комплектни трансформаторни постове (БКТП)", бихме желали да направим следните уточнения:

Препоръки за постигане на необходимата сеизмична устойчивост са посочени в каталога на КРУ 8DJH HA_40-02_8DJH на страница 78.
КРУ 8DJH се произвежда за земетръсни райони. За целта са извършени изпитания за квалифициране по сеизмичност в съответствие със следните стандарти:

- IEC/EN 60068-3-3
- IEC/EN 60068-2-6
- IEEE 693
- IABG TA13-TM-002/98 (ръководство).

С уважение,

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

15.

SIEMENS

TÜV CERT EN ISO 9001:2000 Zertifikat: 75.100.4017B TÜV Rheinland InterCert

ДЕКЛАРАЦИЯ

Долуподписаният, **инж.Таньо Иванов Караиванов**, в качеството си на Ръководител Дивизия „Ниско и Средно напрежение" в рамките на сектор „Инфраструктура и градове" на "Сименс" ЕООД,

ДЕКЛАРИРАМ, ЧЕ:

Комплектна разпределителна уредба за средно напрежение тип 8DJH, производство на SIEMENS AG, би могла бъде долъвана с елегаз (SF_6) на място.

23.07.2013

На основание чл. 2 от ЗЗЛД

инж.

/Ръководител Дивизия Н. и Ср.Н./

ВЯРНО С ОРИГИНАЛА

SIEMENS

ДЕКЛАРАЦИЯ

Долуподписаните Орлин Пламенов Александров, ЕГН: На основание чл. 2 от ЗЗЛД на основание чл. 2 от ЗЗЛД качеството си на Управител, и Елина Вардева-Николова, ЕГН: На основание чл. 2 от ЗЗЛД представител на Сименс ЕООД, дружество регистрирано в Търговския регистър на Агенцията по вписванията с ЕИК 121746004, със седалище и адрес на управление: София 1309, Община Столична, ул. „Кукуш" № 2, ДДС номер BG 121746004,

ДЕКЛАРИРАМЕ, ЧЕ:

Сименс ЕООД, в качеството си на дъщерно дружество на Сименс АГ – надлежно оторизирано да предлага и продава директно или чрез посредници на територията на Република България продукти, произвеждани от концерна Сименс, ще предостави на фирма ПС ЕЛЕКТРИК ООД необходимото оборудване, представляващо комплектни разпределителни уредби Siemens, тип 8DJH, за изпълнение на „открита" по вид процедура за сключване на рамково споразумение с предмет: „Доставка и монтаж на бетонови комплектни трансформаторни постове (БКТП)", РЕФ. № PPD18-063, за нуждите на "ЧЕЗ РАЗПРЕДЕЛЕНИЕ БЪЛГАРИЯ" АД. В случай на сключване на договор между "ЧЕЗ РАЗПРЕДЕЛЕНИЕ БЪЛГАРИЯ" АД и ПС ЕЛЕКТРИК ООД описаните по-горе комплектни разпределителни уредби в количества, предвидени в цитираната процедура, ще бъдат произведени от Сименс АГ.

Дата: 08.08.2018 г.

На основание чл. 2 от ЗЗЛД

/Управител/

СИМЕНС ЕООД СОФИЯ

На основание чл. 2 от ЗЗЛД

/Упълномощен представител/

ВЯРНО С ОРИГИНАЛА

На основание чл. 2 от ЗЗЛД

SIEMENS

ПЪЛНОМОЩНО No..001...1.02.01.2018г.	POWER OF ATTORNEY No..001...1.02.01.2018г.
Долуподписаните д-р инж. **БОРЯНА ГЕОРГИЕВА МАНОЛОВА**, български гражданин, ЕГН [На основание чл. 2 от ЗЗЛД], **ОРЛИН ПЛАМЕНОВ АЛЕКСАНДРОВ**, [На основание чл. 2 от ЗЗЛД] в качеството си на Управители на СИМЕНС ООД, регистрирано в Търговския регистър на Агенцията по вписванията с ЕИК 121746004, със седалище и адрес на управление: София 1309, ул.Кукуш №2, ДДС номер BG 121746004, с настоящото	The undersigned Dr. eng. **BORIANA GEORGIEVA MANOLOVA**, Bulgarian citizen, PIN [На основание чл. 2 от ЗЗЛД] and **ORLIN PLAMENOV ALEXANDROV**, [На основание чл. 2 от ЗЗЛД] in our capacity as Managers of SIEMENS EOOD, entered into the Commercial Registry with the Bulgarian Registry Agency under the Unified Identification Number (UIN) 121746004, registered at: Sofia 1309, No.2 Kukush str., VAT No.121746004 we hereby
УПЪЛНОМОЩАВАМЕ:	**AUTHORIZE:**
ЕЛИНА ВАСИЛЕВА ВАРДЕВА-НИКОЛОВА, [На основание чл. 2 от ЗЗЛД] Старши юрисконсулт на Сименс ЕООД за следното:	**ELINA VASILEVA VARDEVA-NIKOLOVA**, [На основание чл. 2 от ЗЗЛД] Counsel of Siemens EOOD for the following:
Да представлява дружеството Сименс ЕООД **ЗАЕДНО с всеки един от регистрираните управители**, включително и със следните права:	To represent Siemens EOOD **JOINTLY with any one of the registered managers**, through execution of the following rights:
1. Да извършва заедно с всеки един от управителите всички необходими правни и фактически действия, касаещи нормалното функциониране на дружеството, включително и с правото да полага подписи под търговски и граждански договори, търговски оферти, фирмена кореспонденция, тръжни и всякакви други документи и книжа, включително такива изискуеми по закон или по разпореждане на държавни или общински органи и възложители.	1. To perform jointly with any one of the managers all necessary legal or factual actions connected to the company's regular business, including the right to sign commercial and civil contracts, commercial offers, company correspondence, tender or any other kind of documentation that is also required by a decision of governmental or municipal bodies or contracting authorities.
2. Да представлява дружеството, заедно с всеки един от регистрираните управители, пред всички търговски банки и финансови институции, включително да полага заедно с всеки един от управителите подписи при откриване и закриване на банкови гаранции.	2. To represent the Company jointly with any one of the registered managers, in front of any commercial banks and financial institutions, including authorizing jointly with any one of the managers the payment and receipt of bank guarantees.

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
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ВЯРНО С
ОРИГИНАЛА

На основание чл. 2 от ЗЗЛД

3. Да подписва заедно с всеки от управителите оферти и всякакви документи, необходими във връзка с подготовката участието на дружеството в процедури по възлагане на обществени поръчки, включително при възлагане чрез публична покана, както и за упълномощаване на служители на Сименс ЕООД за подготовка и участие в такива процедури или възлагания чрез публична покана.	3. To sign jointly with any one of the managers offers and other documentation, necessary for the preparation and participation in public procurement procedures, including for the award of a tender, as well as for authorizing Siemens EOOD employees for the preparation and participation in public procurement procedures.
4. Да представлява заедно с всеки от управителите дружеството пред всички съдебни, административни, данъчни, държавни и общински органи в РБългария, пред всички търговски дружества и юридически лица с нестопанска цел, включително с правото да подписва съответните молби, книжа и документи, свързани с дейността на дружеството, включително във връзка с осъществяването на процесуално представителство.	4. To represent Siemens EOOD jointly with any one of the managers in front of all judicial, administrative, tax, governmental and municipal authorities in the Republic of Bulgaria and all companies, NGOs, including with the right to sign all documents relevant to Siemens EOOD's business, including for the performance of judicial representation.
5. Да представлява заедно с всеки от управителите дружеството в трудовоправните, осигурителните и данъчните му взаимоотношения с неговите служители и работници.	5. To represent jointly with any one of the managers the company in its labor, insurance and tax relationship with its employees and workers.
Настоящото пълномощно е със срок на валидност до 31.12.2018 г. включително. Настоящото пълномощно е подписано на български и английски език. При нужда от тълкуване българската версия има предимство.	The present Power of Attorney shall be valid to 31.12.2018 including. The present Power of Attorney has been issued in Bulgarian and English language. In case of interpretation, the Bulgarian version shall prevail.

На основание чл. 2 от ЗЗЛД

На основание чл. 2 от ЗЗЛД

На основание чл. 2 от ЗЗЛД

ana Manolova

ВЯРНО С ОРИГИНАЛА

На 18.12.2017 г. **Светлана Георгиева**
помощник-нотариус при **Валентина Георгиева**
Нотариус в район - София
Рег. № 340 на Нотариалната Камара, удостоверявам
подписите върху този документ, положени от:
БОРЯНА ГЕОРГИЕВА МАНОЛОВА ЕГН
На основание чл. 2 от ЗЗЛД
управител на "СИМЕНС"ЕООД ЕИК 121746004
ОРЛИН ПЛАМЕНОВ АЛЕКСАНДРОВ ЕГН
На основание чл. 2 от ЗЗЛД
управител на "СИМЕНС"ЕООД ЕИК 121746004
с местожителство в гр. (с.)

Рег.№ 11744

Помощник-Нотариус:

На основание чл. 2
от ЗЗЛД

На 18.12.2017 г. **Светлана Георгиева**
помощник-нотариус при **Валентина Георгиева**
Нотариус в район - София
Рег. № 340 на Нотариалната Камара, удостоверявам
верността на този препис, снет от:
на официален (частен) документ, представен ми от:
ЕВГЕНИ ДИМИТРОВ ПЕЙКОВ
На основание чл. 2 от ЗЗЛД
с местожителство в гр. (с.)
като в първообраза нямаше зач
поправки и други особености.

Рег.№ 11747

Помощник-Нотариус

ВЯРНО С
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На основание чл. 2
от ЗЗЛД

Превод от английски език

На основание чл. 2
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УПЪЛНОМОЩАВАНЕ

С настоящото се потвърждава, че

„Сименс" ЕООД
ул. Кукуш № 2
София 1309
България

е определен като единствен представител на Акционерно дружество Сименс, Берлин и Мюнхен, Федерална република Германия („Сименс") за Договорни продукти в Договорната територия и получава изключителни права за продажба на Договорни продукти в Договорната територия.

Договорната територия е **Република България**.

Договорните продукти са продуктите, системите и услугите, предлагани от следните направления на Сименс:

Енергия и газ	**(PG)**
- Големи газови турбини	(PG LGT)
- Аеро дериватни газови турбини	(PG AGT)
- Средни газови турбини	(PG MGT)
- Малки газови турбини	(PG SGT)
- Големи парни турбини	(PG LSU)
- Индустриални парни пакетни решения и агрегати (турбогенератори)	(PG ISP)
- Малки парни пакетни решения и агрегати (турбогенератори)	(PG SSP)
- Дресер-Ранд	(PG DR)
- Системи за разпределено управление	(PG DCS)
Сервиз на енергийно оборудване	**(PS)**
- Енергия и газ	(PS PG)
- Разпределено производство и нефт & газ	(PS DO)
- Системи за управление и дигитализация	(PS CD)
Енергиен мениджмънт	**(EM)**
- Средно напрежение и системи	(EM MS)
- Ниско напрежение и продукти	(EM LP)
- Трансформатори	(EM TR)
- Продукти високо напрежение	(EM HP)

ВЯРНО С ОРИГИНАЛА

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ВЯРНО С
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На основание чл. 2 от ЗЗЛД

- Решения за пренос (EM TS)
  ва мрежа (EM DG)

(MO)

- ити мениджмънт (MO MM)
- и „до ключ” и електрификация (MO TPE)
- рален транспорт (MO MLT)
- и транспорт (MO UT)
- кване на клиенти (MO CS)

(DF)

Дигитализирано производство

- Автоматизация на заводи (DF FA)
- Продукти за управление (DF CP)
- Управление на движението (DF MC)
- Обслужване на клиенти DF&PD [1] (DF CS)
- Управление на жизнения цикъл на продуктите (DF PL)

  ограничено до:
  - Управление на производствени операции [2] (DF PL MOM)
  - Решения за приложения в облак (DF PL CAS)

(PD)

Процесни индустрии и задвижвания

- Големи задвижвания [5] (PD LD)

  с изключение на:
  - Тягови задвижвания (PD LD TD)

    ограничени до:
    - Железопътни съоръжения и компоненти (PD LD TD RC)

На основание чл. 2 от ЗЗЛД

Процесна автоматизация [2] [3] (PD PA)

Процесни решения [4] (PD SLN)

Механични задвижвания (PD MD)

с изключение на:

- Вятърна енергия (PD MD WIND)
- Приложения (PD MD AP)

  ограничени до:
  - Турбо предавателни кутии (PD MD AP TUR)
  - Съединения (PD MD AP COU)
  - Промишлени съоръжения (PD MD AP IG)

[1] Договорните продукти са ограничени до обхвата на правата за продажби и представителство на направленията Дигитализирано производство (DF) и Процесни индустрии и задвижвания (PD), както са определени в този документ.

[2] Правата за продажби и представителство на Договорните продукти на Процесни индустрии и задвижвания, Процесна автоматизация, Автоматизация и инженерни системи, Промишлени решения

ВЯРНО С ОРИГИНАЛА

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COMOS (PD PA AE CIS) и Дигитализирано производство, Управление на жизнения цикъл на продуктите, Управление на производствените операции (DF PL MOM) са **неизключителни**. Правата за продажби и представителство на Договорните продукти на Дигитализирано производство, Управление на жизнения цикъл на продуктите, Управление на производствените операции (DF PL MOM), ограничено до IBS и Camstar, са **изключени**.

[3]) Правата за продажби и представителство на Договорните продукти на Процесни индустрии и задвижвания, Промишлена комуникация и идентификация, Устойчива комуникация (PD PA CI RC) са **изключени**.

[4]) Правата за продажби и представителство на Договорните продукти на Процесни индустрии и задвижвания, Процесни решения, Водни решения (PD SLN WS) са **неизключителни**.

[5]) Правата за продажби и представителство на Договорните продукти на Процесни индустрии и задвижвания, Големи задвижвания, Тягови и серийни задвижвания, Електрически търговски превозни средства (PD LD TD ECV), ограничени до производителите на оригинално оборудване: AMW (Индия), Ashok Leyland (Индия), Beiben (Китай), Chrysler (САЩ), DFVC (Dongfeng) (Китай), Eaton (САЩ), Ford Group (САЩ), Hualing (Китай), Hongyan (Китай), Hyundai (Корея), International (Navistar) (САЩ), Jianghuai (JAC) (Китай), Lifan Auto (Китай), Shaanxi Auto (Китай), Sichuan Hyundai (Китай), Sisu (Финландия), Swaraj Mazda (Индия), Volvo Group (Швеция) и Yinhe (Китай), са **изключени**.

На основание чл. 2 от ЗЗЛД

В това качество **„Сименс" ЕООД** има право да предлага на пазара, да осигурява посредничество и да продава Договорни продукти в Договорната територия.

„Сименс" ЕООД също така има право да получава поръчки и запитвания от публични органи и частни клиенти в Договорната територия в рамките на обхвата на неговите правомощия и да предава съответните оферти, отправени от Сименс.

Сключването на договори или споразумения от името на Сименс или извършването на действия, които налагат финансово или друго задължение на Сименс, изискват предварителното писмено съгласие на Сименс.

Това Разрешение е в сила до **31 декември 2018** г.

На основание чл. 2 от ЗЗЛД

томври 2017 г.
ужество Сименс
чете]

[подпис – не се чете]
Щефан Кнаус

: 2855/2017

Нотариална заверка

Аз, долуподписаният нотариус, д-р Тил Шеман от Мюнхен, с настоящото удостоверявам истинността на подписите, положени в мое присъствие от:

1. г-н Тим Александър **Холцапфел**, роден на 15 ноември 1973 г., който ми е лично познат;
2. г-н Щефан **Кнаус**, роден на 20 април 1963 г., който ми е лично познат,

и двамата от Мюнхен, със служебен адрес: Вителсбахерплац 2, Мюнхен 80333, действащи от името на **Акционерно дружество Сименс**, със седалище в Берлин и Мюнхен, вписано под № HRB 6684 в Търговския регистър на Районния съд в Мюнхен.

ВЕРНО С ОРИГИНАЛА

Мюнхен, 25 октомври 2017 г.
[подпис – не се чете] [скрепено с релефен печат на нотариуса]
д-р Тил Шеман, нотариус

На основание чл. 2
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На основание чл. 2 от ЗЗЛД

АПОСТИЛ

(Хагска конвенция от 5 октомври 1961 г.)

ържава: **Федерална република Германия**

ози публичен акт

подписан от **нотариус д-р Тил Шеман**

качеството на **нотариус**

е поставен печат/марка на **нотариус д-р Тил Шеман от Мюнхен**

Заверен

Мюнхен 6. на **26 октомври 2017 г.**

председателя на Районния съд в Мюнхен

од № **910 а 11891/2017**

Печат:

[печат на председателя на Районния съд в Мюнхен]

10. Подпис:

От името на:

[подпис – не се чете]

Марсел Рет

Старши секретар по правосъдие

Подписаният Борис Христов Стойчев удостоверявам верността на извършения от мен превод от английски на български език на приложения документ - Упълномощаване; Апостил № 910 а 11891/2017 от 26 октомври 2017 г. Преводът се състои от 4 (четири) страници.

Преводач: Борис Христов Стойчев

На основание чл. 2 от ЗЗЛД

На основание чл. 2 от ЗЗЛД

Министерство на външните работи

Дирекция "Консулски отношения"

удостоверява подписа на преводача:

На основание чл. 2 от ЗЗЛД

Министерство на външните работи не носи отговорност за верността на превода.

София, дата: 22.11.2017

Сектор "Заверки и легализация"

ID: 10-753E45316CAD

Събрана такса:

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

На основание чл. 2
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ВЯРНО С
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SIEMENS

AUTHORIZATION

На основание чл. 2 от ЗЗЛД

hfirm that

Siemens EOOD
2 Kukush Str.
1309 Sofia
Bulgaria

ppointed the sole agent of Siemens Aktiengesellschaft, Berlin and Munich, Federal Republic of Germany ("Siemens") for Contractual Products in the Contractual Territory and is granted the exclusive sales rights for Contractual Products in the Contractual Territory.

The Contractual Territory is the **Republic of Bulgaria**.

Contractual Products are the products, systems and services marketed by the following Siemens Divisions:

На основание чл. 2 от ЗЗЛД

Power and Gas:	**(PG)**
➢ Large Gas Turbines	(PG LGT)
➢ Aero Derivative Gas Turbines	(PG AGT)
➢ Medium Gas Turbines	(PG MGT)
➢ Small Gas Turbines	(PG SGT)
➢ Large Steam Turbines	(PG LSU)
➢ Industrial Steam Packages	(PG ISP)
➢ Small Steam Packages	(PG SSP)
➢ Dresser-Rand	(PG DR)
➢ Distributed Control Systems	(PG DCS)
Power Generation Services:	**(PS)**
➢ Power and Gas	(PS PG)
➢ Distributed Generation and Oil & Gas	(PS DO)
➢ Controls and Digitalization	(PS CD)
Energy Management:	**(EM)**
➢ Medium Voltage & Systems	(EM MS)
➢ Low Voltage & Products	(EM LP)
➢ Transformers	(EM TR)
➢ High Voltage Products	(EM HP)
➢ Transmission Solutions	(EM TS)
➢ Digital Grid	(EM DG)

ВЯРНО С ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

ВЯРНО С
ОРИГИНАЛА

SIEMENS

На основание чл. 2 от ЗЗЛД

Mobility: **(MO)**

- Mobility Management (MO MM)
- Turnkey Projects & Electrification (MO TPE)
- Mainline Transport (MO MLT)
- Urban Transport (MO UT)
- Customer Services (MO CS)

Digital Factory: **(DF)**

- Factory Automation (DF FA)
- Control Products (DF CP)
- Motion Control (DF MC)
- Customer Services DF&PD [1] (DF CS)
- Product Lifecycle Management (DF PL)
  - **limited to:**
    - Manufacturing Operations Management [2] (DF PL MOM)
    - Cloud Application Solutions (DF PL CAS)

Process Industries and Drives: **(PD)**

- Large Drives [5] (PD LD)
  - **with the exception of:**
    - Traction Drives (PD LD TD)
      - **limited to:**
        - Railway Gears and Components (PD LD TD RC)
- Process Automation [2] [3] (PD PA)
- Process Solutions [4] (PD SLN)
- Mechanical Drives (PD MD)
  - **with the exception of:**
    - Winergy (PD MD WIND)
    - Applications (PD MD AP)
      - **limited to:**
        - Turbo Gear Boxes (PD MD AP TUR)
        - Couplings (PD MD AP COU)
        - Industrial Gears (PD MD AP IG)

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

1) The Contractual Products are restricted to the scope of sales and representation rights of the Divisions Digital Factory (DF) and Process Industries and Drives (PD) as defined here.

2) Sales and representation rights to the Contractual Products of Process Industries and Drives, Process Automation, Automation & Engineering Systems, COMOS Industry Solutions (PD PA AE CIS) and Digital Factory, Product Lifecycle Management, Manufacturing Operations Management (DF PL MOM) are **non-exclusive** only. Sales and representation rights to the Contractual Products of Digital Factory, Product Lifecycle Management, Manufacturing Operations Management (DF PL MOM), limited to IBS and Camstar, are **excluded**.

3) Sales and representation rights to the Contractual Products of Process Industries and Drives, Industrial Communication and Identification, Rugged Communication (PD PA CI RC) are **excluded**.

4) Sales and representation rights to the Contractual Products of Process Industries and Drives, Process Solutions, Water Solutions (PD SLN WS) are **non-exclusive** only.

На основание чл. 2
от ЗЗЛД

На основание чл. 2
от ЗЗЛД

ВЯРНО С
ОРИГИНАЛА

SIEMENS

На основание чл. 2
от ЗЗЛД

5) Sales and representation rights to the Contractual Products of Process Industries and Drives, Larges Drives, Traction and Series Drives, Electric Commercial Vehicles (PD LD TD ECV) limited to the OEMs: AMW (IN), Ashok Leyland (IN), Beiben (CN), Chrysler (US), DFVC (Dongfeng) (CN), Eaton (US), Ford Group (US), Hualing (CN), Hongyan (CN), Hyundai (KR), International (Navistar) (US), Jianghuai (JAC), (CN), Lifan Auto (CN), Shaanxi Auto (CN), Sichuan Hyundai (CN), Sisu (FI), Swaraj Mazda (IN), Volvo Group (SWE) and Yinhe (CN), are **excluded**.

In this capacity, **Siemens EOOD** is authorized to market, mediate and sell Contractual Products in the Contractual Territory.

Siemens EOOD is also authorized to receive tenders and inquiries from public authorities and private customers in the Contractual Territory within the scope of its authorization and to deliver corresponding offers made by Siemens.

The conclusion of any contract or agreement on behalf of Siemens or any action imposing any financial or other obligation on Siemens requires the prior written consent of Siemens.

This Authorization is valid until **December 31, 2018.**

Munich, Oktober 25, 2017

Siemens Aktiengesellschaft

На основание чл. 2
от ЗЗЛД

На основание чл. 2
от ЗЗЛД

ВЯРНО С
ОРИГИНАЛА

На основание чл. 2
от ЗЗЛД

На основание чл. 2
от ЗЗЛД

ВЯРНО
ОРИГИНА

URNr S /2017

На основание чл. 2 от ЗЗЛД

Notary's Certificate

undersigned Notary Dr. Till Schemmann of Munich, hereby certify the
ticity of the signatures, which were subscribed in my presence by

1. Mr Tim Alexander **Holzapfel,**
   born on 15 November 1973,
   personally known to me,

2. Mr Stefan **Knaus,**
   born on 20 April 1963,
   personally known to me,

both of Munich, business address: Wittelsbacherplatz 2, 80333 Munich,

both acting on behalf of the company

Siemens Aktiengesellschaft

with its statutory seat in Berlin and Munich,

На основание чл. 2 от ЗЗЛД

er[illegible] under No. HRB 6684 in the Commercial Register of the
sger[illegible]ht" (District Court) of Munich.

ch, 25 [illegible]ctober 2017

ВЯРНО С ОРИГИНАЛА

На основание чл. 2 от ЗЗЛД

I Notary

На основание чл. 2
от ЗЗЛД

На основание чл. 2
от ЗЗЛД

ВЯРНО
ОРИГИНАЛА

На основание чл. 2 от ЗЗЛД

APOSTILLE

nvention de La Haye du 5 octobre 1961)

desrepublik Deutschland

ntliche Urkunde

hrieben von Notar D

На основание чл. 2 от ЗЗЛД

igenschaft als Nota

4. Sie ist versehen mit dem Siegel des Notars Dr. Till Schemmann in München.

Bestätigt

5. in München 6. am 26. Oktober 2017
7. durch den Präsidenten des Landgerichts München I
8. unter Nr. 910 a 11891/2017
9. Siegel 10. Unterschrift

Im Auftrag

На основание чл. 2 от ЗЗЛД

На основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

На 13.12.2017 г. **Светлана Георгиева**
помощник-нотариус при **Валентина Георгиева**
Нотариус в район - София
Рег. № 340 на Нотариалната Камара удостоверявам
верността на този препис, снет от: оригинал
на официален (частен) документ, представен ми от:
ЕВГЕНИ ДИМИТРОВ ПЕЙКО
с местожителство в гр. (с.)
като в първообраза нямаше зачер
поправки и други особености.

Рег.№ 11545

Помощник-Нотариус:

На основание чл. 2
от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

17.

Сертификат

Стандарт	**ISO 9001:2008**
Рег № на сертификата	01 100 1334413

TÜV Rheinland Cert GmbH удостоверява:

Притежател на сертификата	**СИМЕНС ЕООД** 1309 София ул. Кукуш № 2 България Включително местоположения съгласно приложение
Област на приложение	Търговска дейност с технически продукти, обслужване, поддръжка и изграждане под ключ на обекти и системи, както и изпълнение на проекти в областта на енергийния мениджмънт, енергия и газ, сервиз на енергийно оборудване, транспортни системи за градски и междуградски транспорт, електрификация, ж.п. автоматизация, дигитализирано производство, процесни индустрии и задвижвания, сградни технологии; Индустриални решения, сграден мениджмънт, обществено осветление, графичен инженерингов компетенц център за системи за сградни технологии, разработване на системи за управление в сферата на енергетиката; IT решения и услуги, инсталиране, поддръжка и експлоатация на IT и комуникационна инфраструктура; Производство и монтаж на активни части (електрически единици) за електрически апарати за високо напрежение.
Валидност	Настоящият сертификат е валиден от **20.03.2016** до **14.09.2018**. Първоначална сертификация: 2005

ВЯРНО С ОРИГИНАЛА

Проведеният одит - доклад 1334413, показа, че са изпълнени изискванията на ISO 9001:2008.

Дата за провеждане на следващия одит до 27.02. (д.м).

На основание чл. 2 от ЗЗЛД

16.03.2016

ert GmbH
105 Köln

www.tuv.com

DAkkS Deutsche Akkreditierungsstelle D-ZM-16031-01-00

TÜVRheinland®
Precisely Right.

Certificate

Standard	**ISO 9001:2008**
Certificate Registr. No.	01 100 1334413

TÜV Rheinland Cert GmbH certifies:

Certificate Holder	**SIEMENS EOOD** BG–1309 Sofia 2 Kukush Str. Bulgaria Including locations according to annex
Scope	Commercial activities with technical products, service, maintenance and development of systems and turn-key projects, execution of projects in the field of Energy Management, Power and Gas, Service of Energy Equipment, Transportation Systems for Urban and Interurban Transport, Electrification, Railway Automation, Digital Factory, Process Industry and Drives, Building Technologies; Industrial Solutions, Building Management, Public Lighting, Graphic Engineering Competence Center for Building Management Systems, Development of Management Systems in the field of Energy; IT solutions and services, installation, maintenance and operation of IT and communication infrastructure; Production and assembly of active parts (electrical units) for High Voltage electrical devices.

ВЯРНО С ОРИГИНАЛА

An audit was performed, Report No. 1334413. Proof has been furnished that the requirements according to ISO 9001:2008 are fulfilled.

The due date for all future audits is till 27.02. (dd.mm).

Validity	The certificate is valid from **20.03.2016** until **14.09.2018**. First certification: 2005

16.03.2016

На основание чл. 2 от ЗЗЛД

t GmbH
05 Köln

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ПРИЛОЖЕНИЕ КЪМ СЕРТИФИКАТ

Регистрационен номер на сертификата: 01 100 1334413

Валидността на настоящото приложение е в съответствие с тази на главния сертификат.
Списък на местоположенията и област на тяхната дейност.

СИМЕНС ЕООД **Производствено поделение Правец** 2161 Правец ул. Строител № 3	Производство и монтаж на активни части (елетрически единици) за електрически апарати за високо напрежение.
СИМЕНС ЕООД **Офис Варна** 9000 Варна Биснес парк, сграда Б1, офис 108.3	Търговска дейност с технически продукти.
СИМЕНС ЕООД **Офис Сливен** 8800 Сливен ул. Хаджи Димитър № 17, ет. 4	Изграждане и поддръжка на обществено осветление.

ВЯРНО С ОРИГИНАЛА

На основание чл. 2 от ЗЗЛД

16.03.2016

Am

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Deutsche
Akkreditierungsstelle
D-ZM-16031-01-00

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ANNEX TO CERTIFICATE

Certificate Registration Nr. 01 100 1334413

The validity of this supplement is identical with the main certificate.
List of locations and their fields of activities.

SIEMENS EOOD **Production unit Pravets** 2161 Pravets 3 Stroitel Str.	Production and assembly of active parts (electrical units) for High Voltage electrical devices.
SIEMENS EOOD **Office Varna** 9000 Varna Business Park, building B1, office 108.3	Commercial activities with technical products.
SIEMENS EOOD **Office Sliven** 8800 Sliven 17 Hadzhi Dimitar Str.	Construction and maintenance of public lighting.

ВЯРНО С ОРИГИНАЛА

На основание чл. 2 от ЗЗЛД

16.03.2016

DAkkS
Deutsche Akkreditierungsstelle
D-ZM-16031-01-00

Certificate

Standard **ISO 14001:2004**

Certificate Registr. No. 01 104 1334413

Certificate Holder: **SIEMENS EOOD**
2, Kukush Str.
1309 Sofia
Bulgaria

including the locations according to annex

Scope: Commercial activities with technical products, service, maintenance and development of systems and turn-key projects, execution of projects in the field of Energy Management, Power and Gas, Service of Energy Equipment, Transportation Systems for Urban and Interurban Transport, Electrification, Railway Automation, Digital Factory, Process Industry and Drives, Healthcare, Building Technologies; Industrial Solutions, Building Management, Public Lighting, Graphic Engineering Competence Center for Building Management Systems, Development of Management Systems in the field of Energy; IT solutions and services, installation, maintenance and operation of IT and communication infrastructure; Production and assembly of active parts (electrical units) for High Voltage electrical devices

Proof has been furnished by means of an audit that the requirements of ISO 14001:2004 are met.

ВЯРНО С ОРИГИНАЛА

Validity: The certificate is valid from 2016-04-10 until 2018-09-14.
First certification 2013

2016-03-21

На основание чл. 2
от ЗЗЛД

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DAkkS Deutsche Akkreditierungsstelle D-ZM-16011-01-00

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Annex to certificate

Standard **ISO 14001:2004**

Certificate Reg. No. CERTIFICATE

No.	Location	Scope
/02	**SIEMENS EOOD** **Production unit Pravets** 2161 Pravets 3, Stroitel Str. Bulgaria	Production and assembly of active parts (electrical units) for High Voltage electrical devices
/03	**SIEMENS EOOD** **Office Varna** 9000 Varna, Business Park Building B1, Office 108.3 Bulgaria	Commercial activities with technical products
/04	**SIEMENS EOOD** **Office Sliven** 8800 Sliven 17, Hadzhi Dimitar Str. Bulgaria	Construction and maintenance of public lighting

ВЯРНО С ОРИГИНАЛА

2016-03-21

На основание чл. 2 от ЗЗЛД

Сертификат

Стандарт **ISO 14001:2004**

Рег № на сертификата 01 104 1334413

Притежател на сертификата:

СИМЕНС ЕООД
1309 СОФИ R
Ул. № Кукуш № 2
България

включително местоположение съгласно приложението

Област на приложение:

Търговска дейност с технически продукти, обслужване, поддръжка и изграждане под ключ на обекти и системи, както и изпълнение на проекти в областта на енергийния мениджмънт, енергия и газ, сервиз на енергийно оборудване, транспортни системи за градски и междуградски транспорт, електрификация, ж.п. автоматизация, дигитализирано производство, процесни индустрии и задвижвания, сградни технологии;
Индустриални решения, сграден мениджмънт, обществено осветление, графичен инженерингов компетенц център за системи за сградни технологии, разработване на системи за управление в сферата на енергетиката;
IT решения и услуги, инсталиране, поддръжка и експлоатация на IT и комуникационна инфраструктура;
Производство и монтаж на активни части (електрически единици) за електрически апарати за високо напрежение

ВЯРНО С ОРИГИНАЛА

Чрез извършване на одит беше доказано, че са изпълнени изискванията по ISO 14001:2004.

Валидност:

Настоящият сертификат е валиден от 2016-04-10 до 2018-09-14.
Първият сертификат е издаден през 2013

2016-03-21

На основание чл. 2 от ЗЗЛД

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Анекс към сертификат

Стандарт **ISO 14001:2004**

Рег.№ на сертификата 01 104 1334413

№	Местоположение	Област на приложение
/02	**СИМЕНС ЕООД** **Производствено поделение Правец** 2161Правец ул."Строител" 3 България	Производство и монтаж на активни части (електрически единици) за електрически апарати за високо напрежение
/03	**СИМЕНС ЕООД** **Офис Варна** 9000 Варна Бизнес парк сграда Б1 Офис 108.3 България	Търговска дейност с технически продукти
/04	**СИМЕНС ЕООД** **Офис Сливен** 8800 Сливен, ул. „Хаджи Димитър" 17, ет.4 България	Изграждане и поддръжка на обществено осветление

ВЕРНО С ОРИГИНАЛА

2016-03-21

На основание чл. 2 от ЗЗЛД

Am Grauen Stein · 51105 Köln

Certificate

Standard **BS OHSAS 18001:2007**

Certificate Registr. No. 01 113 060671

Certificate Holder: **SIEMENS EOOD**
2 Kukush Str.
1309 Sofia
Bulgaria

including the locations according to annex

Scope: Commercial activities with technical products, service, maintenance and development of systems and turn-key projects, execution of projects in the field of Energy Management, Power and Gas, Service of Energy Equipment, Transportation Systems for Urban and Interurban Transport, Electrification, Railway Automation, Digital Factory, Process Industry and Drives, Building Technologies; Industrial Solutions, Building Management, Public Lighting, Graphic Engineering Competence Center for Building Management Systems, Development of Management Systems in the field of Energy; IT solutions and services, installation, maintenance and operation of IT and communication infrastructure; Production and assembly of active parts (electrical units) for High Voltage electrical devices

Proof has been furnished by means of an audit that the requirements of BS OHSAS 18001:2007 are met.

ВЯРНО С ОРИГИНАЛА

Validity: The certificate is valid from 2016-03-22 until 2019-03-21.
First certification 2013

2016-03-21

На основание чл. 2 от ЗЗЛД

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DAkkS Deutsche Akkreditierungsstelle D-ZM-16031-01-00

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Precisely Right.

Annex to certificate

Standard **BS OHSAS 18001:2007**

Certificate Reg. No. 01 113 060671

No.	Location	Scope
/02	**SIEMENS EOOD** **Production unit Pravets** 2161 Pravets 3, Stroitel Str. Bulgaria	Production and assembly of active parts (electrical units) for High Voltage electrical devices
/03	**SIEMENS EOOD** **Office Varna** 9000 Varna, Business Park Building B1, Office 108.3 Bulgaria	Commercial activities with technical products
/04	**SIEMENS EOOD** **Office Sliven** 8800 Sliven 17, Hadzhi Dimitar Str. Bulgaria	Construction and maintenance of public lighting

ВЯРНО С ОРИГИНАЛА

2016-03-21

На основание чл. 2 от ЗЗЛД

Сертификат

Стандарт **BS OHSAS 18001:2007**

Рег № на сертификата 01 113 060671

Притежател на сертификата:

СИМЕНС ЕООД
1309 София
ул. Кукуш № 2
България

включително местоположение съгласно приложението

Област на приложение:

Търговска дейност с технически продукти, обслужване, поддръжка и изграждане под ключ на обекти и системи, както и изпълнение на проекти в областта на енергийния мениджмънт, енергия и газ, сервиз на енергийно оборудване, транспортни системи за градски и междуградски транспорт, електрификация, ж.п. автоматизация, дигитализирано производство, процесни индустрии и задвижвания, сградни технологии; Индустриални решения, сграден мениджмънт, обществено осветление, графичен инженерингов компетенц център за системи за сградни технологии, разработване на системи за управление в сферата на енергетиката, IT решения и услуги, инсталиране, поддръжка и експлоатация на IT и комуникационна инфраструктура; Производство и монтаж на активни части (електрически единици) за електрически апарати за високо напрежение

Чрез извършване на одит беше доказано, че са изпълнени изискванията по BS OHSAS 18001:2007.

ВЯРНО С ОРИГИНАЛА

Валидност:

Настоящият сертификат е валиден от 2016-03-22 до 2019-03-21.
Първият сертификат е издаден през 2013

2016-03-21

На основание чл. 2 от ЗЗЛД

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Анекс към сертификат

Стандарт **BS OHSAS 18001:2007**

Рег.№ на сертификата 01 113 060671

№	Местоположение	Област на приложение
/02	**СИМЕНС ЕООД** **Производствено поделение Правец** 2161Правец ул."Строител" 3 България	Производство и монтаж на активни части (електрически единици) за електрически апарати за високо напрежение
/03	**СИМЕНС ЕООД** **Офис Варна** 9000 Варна Бизнес парк сграда Б1 Офис 108.3 България	Търговска дейност с технически продукти
/04	**СИМЕНС ЕООД** **Офис Сливен** 8800 Сливен, ул. „Хаджи Димитър" 17, ет.4 България	Изграждане и поддръжка на обществено осветление

ВЯРНО С ОРИГИНАЛА

2016-03-21

На основание чл. 2 от ЗЗЛД

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DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No.:	Initial date:	Valid:
134373-2013-AHSO-GER-DAkkS	2008 (BS OHSAS 18001)	07. January 2017 – 06. January 2020

This is to certify that the management system of

Siemens AG
Division Energy Management
Medium Voltage & Systems EM MS

Mozartstr. 31c, 91052 Erlangen - Germany
and the sites as mentioned in the Appendix accompanying this Certificate

has been found to conform to the Occupational Health and Safety Management System standard:

BS OHSAS 18001:2007

ВЯРНО С ОРИГИНАЛА

This certificate is valid for the following scope:

Development, Production and Sales of Medium Voltage Switchgear, Circuit Breakers and Components up to 52 kV, Low Voltage Switchboards and Busbar Systems; Planning and Execution of Turnkey Power Supply Systems

Place and date:
Essen, 07. January 2017

DAkkS
Deutsche
Akkreditierungsstelle
D-ZM-18453-01-00

For the Accredited Unit:
DNV GL Business Assurance Zertifizierung und Umweltgutachter GmbH

На основание чл. 2 от ЗЗЛД

This certificate replaces the issue of 01.10.2014.

DNV·GL

Certificate No.: 134373-2013-AHSO-GER-DAkkS
Place and date: Essen, 07. January 2017

Appendix to Certificate

Siemens AG Division
Energy Management Medium
Voltage & Systems EM MS
Locations included in the certification are as follows:

Site Name	Site Address	Site Scope
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Mozartstr. 31c D-91052 Erlangen	Sales of Medium Voltage Switchgear, Circuit Breakers and Components up to 52 kV, Low Voltage Switchboards and Busbar Systems; Planning and Execution of Turnkey Power Supply Systems
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Carl-Benz-Str. 22 D-60386 Frankfurt	Development of Gas and Air Insulated Medium Voltage Switchgear up to 52 kV, Production of Gas Insulated Medium Voltage Switchgear up to 52 kV
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Nonnendammallee 104 D-13629 Berlin	Development and Production of Medium Voltage Switchgear and Cicuit Beakers
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Rohrdamm 88 D-13629 Berlin	Development and Production of Medium Voltage Switchgear and Components up to 52 kV
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Südstr. 74 D-04178 Leipzig	Sales, Development, Production and Service of Low Voltage Switchboards
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Frohnhofstr. 103-107 D-50827 Köln	Sales, Development and Production of Busbar Systems
Siemens, s.r.o. o.z. Busbar Trunking Systems	Nádražní 30 CZ-78985 Mohelnice	Development and Production of Busbar Systems

ВЯРНО С ОРИГИНАЛА

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No:
212006-2016-AHSO-GER-DAkkS

Initial certification date:
1995 (ISO 9001)
1997 (ISO 14001)

Valid:
07. January 2017 - 14. September 2018

This is to certify that the management system of

Siemens AG
Division Energy Management
Medium Voltage & Systems EM MS

Mozartstr. 31c, 91052 Erlangen - Germany
and the sites as mentioned in the Appendix accompanying this Certificate

has been found to conform to the Management System standards:

ISO 9001:2008
ISO 14001:2004

ВЯРНО С ОРИГИНАЛА

This certificate is valid for the following scope:

Development, Production and Sales of Medium Voltage Switchgear, Circuit Breakers and Components up to 52 kV, Low Voltage Switchboards and Busbar Systems; Planning and Execution of Turnkey Power Supply Systems

Place and date:
Essen, 05. January 2017

DAkkS
Deutsche
Akkreditierungsstelle
D-ZM-18453-01-00

На основание чл. 2
от ЗЗЛД

This certificate replaces the issue of
01.10.2014.

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance Zertifizierung und Umweltgutachter GmbH, Schnieringshof 14, 45329 Essen, Germany.
TEL: +49 201 7296-222, www.dnvgl.de/assurance

Certificate No: 212006-2016-AHSO-GER-DAkkS
Place and date: Essen, 05. January 2017

Appendix to Certificate

Siemens AG Division
Energy Management Medium
Voltage & Systems EM MS
Locations included in the certification are as follows:

Site Name	Site Address	Site Scope
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Mozartstr. 31c D-91052 Erlangen	Sales of Medium Voltage Switchgear, Circuit Breakers and Components up to 52 kV, Low Voltage Switchboards and Busbar Systems; Planning and Execution of Turnkey Power Supply Systems
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Carl-Benz-Str. 22 D-60386 Frankfurt	Development of Gas and Air Insulated Medium Voltage Switchgear up to 52 kV, Production of Gas Insulated Medium Voltage Switchgear up to 52 kV
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Nonnendammallee 104 D-13629 Berlin	Development and Production of Medium Voltage Switchgear and Cicuit Beakers
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Rohrdamm 88 D-13629 Berlin	Development and Production of Medium Voltage Switchgear and Components up to 52 kV
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Südstr. 74 D-04178 Leipzig	Sales, Development, Production and Service of Low Voltage Switchboards
Siemens AG Division Energy Management Medium Voltage & Systems EM MS	Frohnhofstr. 103-107 D-50827 Köln	Sales, Development and Production of Busbar Systems
Siemens, s.r.o. o.z. Busbar Trunking Systems	Nádražní 30 CZ-78985 Mohelnice	Development and Production of Busbar Systems

ВЯРНО С ОРИГИНАЛА

Сертификат

Одитен стандарт **ISO/IEC 27001:2013**

Рег № на сертификата 01 153 07031

Притежател на сертификата:

СИМЕНС ЕООД
ул. Кукуш No 2
1309 София
България

Област на валидност:

Сигурност на информационните активи на организацията и заинтересованите страни за дефинираните процеси: Търговска дейност с технически продукти, обслужване, поддръжка и изграждане под ключ на обекти и системи, както и изпълнение на проекти в областта на енергийния мениджмънт, енергия и газ, сервиз на енергийно оборудване, транспортни системи за градски и междуградски транспорт, електрификация, ж.п. автоматизация, дигитализирано производство, процесни индустрии и задвижвания, сградни технологии; Индустриални решения, сграден мениджмънт, обществено осветление, разработване на решения за сградни технологии, разработване на системи за управление в сферата на енергетиката
IT решения и услуги, инсталиране, поддръжка и експлоатация на IT и комуникационна инфраструктура

ВЯРНО С ОРИГИНАЛА

Оценено в съответствие с Декларация за приложимост v.5/21.08.2017

Чрез извършване на одит беше доказано, че са изпълнени изискванията по ISO/IEC 27001:2013 - Information security management systems.

Валидност:

Настоящият сертификат е валиден
от 03.11.2017 до 02.11.2020.
Първият сертификат е издаден през 2014

02.11.2017

На основание чл. 2 от ЗЗЛД

Certificate

Standard **ISO/IEC 27001:2013**

Certificate Registr. No. 01 153 07031

Certificate Holder: **SIEMENS EOOD**
2 Kukush str., floors 1, 3, 4, 5, 6,
BG - Sofia 1309

Scope: Security of information assets of organization and interested parties related to defined processes:
Commercial activities with technical products, service, maintenance and development of systems and turn-key projects, execution of projects in the field of Energy Management, Power and Gas, Service of Energy Equipment, Transportation Systems for Urban and Interurban Transport, Electrification, Railway Automation, Digital Factory, Process Industry and Drives, Building Technologies; Industrial Solutions, Building Management, Public Lighting, Solution development for Building Technology, Development of Management Systems in the field of Energy

IT solutions and services, operation and maintenance of IT and communication infrastructure

Assessed in accordance with Statement of Applicability v.5/21.08.2017

Proof has been furnished by means of an audit that the requirements of ISO/IEC 27001:2013 are met.

Validity: The certificate is valid from 2017-11-03 until 2020-11-02.
First certification 2014

ВЯРНО С ОРИГИНАЛА

2017-11-02

На основание чл. 2 от ЗЗЛД

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DAkkS Deutsche Akkreditierungsstelle D-ZM-16031-01-00

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Precisely Right.