



Choose certainty.
Add value.

Technical Report

for

NFPA 79 Listing

of the Safety Components / Safety Control Gears SIRIUS 3SK1

Applicant

Siemens AG
Werner-von-Siemens-Str. 48
D-92224 Amberg
Germany

Manufacturer

Siemens AG
Werner-von-Siemens-Str. 48
D-92224 Amberg
Germany

Report № SA85146T

Revision: 1.1, Date 2014-03-13

Test Body

TÜV SÜD Rail GmbH
Generic Safety Systems
D-80339 Munich

This report consists of 6 pages.

This technical report may be represented only in complete wording. The use for promotion needs written permission. It contains the result of a unique investigation of the product being tested and places no generally valid judgment about characteristics out of the running fabrication. Official translations of this technical report are to be authorized by the test and certification agency.

Revision History

| Revision | Date | Author | Status | Modifications |
|----------|------------|-----------------|---------|-----------------------------|
| 1.0 | 2013-07-29 | Leonhard Brandl | Initial | - |
| 1.1 | 2014-03-13 | T. Paradzik | final | Updated table 3 and table 4 |

Table 1: Revision history

Content

| | |
|--|----------|
| Revision History | 2 |
| Content | 2 |
| List of Tables | 2 |
| 1 Target of Evaluation (ToE) | 3 |
| 2 Purpose of the Document | 3 |
| 3 Basis of Testing | 3 |
| 4 Documents Provided for Testing of SIRIUS 3SK1 | 3 |
| 5 Performance and Result of Tests | 4 |
| 5.1 Test Reports | 4 |
| 5.2 Description of the Assessment | 4 |
| 5.3 Identification | 5 |
| 6 Summary | 6 |

List of Tables

| | |
|--|---|
| Table 1: Revision history | 2 |
| Table 2: Documentation | 4 |
| Table 3: Test results | 4 |
| Table 4: EuT type identification | 5 |

1 Target of Evaluation (ToE)

Subject of the approval is the safety-related Safety Components / Safety Control Gears SIRIUS 3SK1 listed in [D1] from Siemens AG according to NFPA 79. The Project No. related to this Technical Report was as follows: 717503605.

2 Purpose of the Document

This report presents the approval results related to an IEC 61508:2010 certified product. Therefore the assessment is restricted to the auxiliary requirements demanded by NFPA 79:2012. The underlying test documentation is listed in section 4, the regarded standard/s in section 3.

3 Basis of Testing

The regulations and guidelines which form the basis of the type testing are listed below.

| No. | Standard | Title |
|------|--------------|--|
| [L1] | NFPA 79:2012 | Electrical Standard for Industrial Machinery |

4 Documents Provided for Testing of SIRIUS 3SK1

The following documents were provided by Siemens AG to be checked and evaluated by the test house.

| No. | Title | Document-No./ File identifier | Revision | Date |
|------|--|----------------------------------|----------|------------|
| [D1] | Test Report Vibration/Shock Test | 12085ENV | - | 2012-09-27 |
| [D2] | Test Report Vibration/Shock Test | <i>Prüfbericht 12085ENV.pdf</i> | - | 2012-10-15 |
| [D3] | User Manual | A5E02526190011A/RS-AB/002 | V2 | 2013-04 |
| [D4] | Original Instructions (in German) 3SK1xxx without 3SK1213 | A5E02526180011-001 | - | 2012-09-28 |
| [D5] | Original Instructions (in German) 3SK1213 only | A5E02526180021-001 | - | 2012-11-13 |

| No. | Title | Document-No./ File identifier | Revision | Date |
|-------|--|----------------------------------|----------|------------|
| [D6] | Test Report on Damp Heat for 3SK1112-_BB40 | 12073ENK | - | 2012-08-16 |
| [D7] | Test Report on EMC Measurements (Immunity and Emissions) according to IEC 60947-5-1:/A1:2009 | 12-E005351-BM-A01 | 01 | 2012-09-11 |
| [D8] | Test Report on EMC Measurements according to IEC 61326-1:2008 | 12-E005351-BM-B01 | 01 | 2012-09-11 |
| [D9] | Test Report on EMC Measurements According to NFPA79:2012 | 13-E005678-BM-A01 | 01 | 2013-05-06 |
| [D10] | Test summary on IEC 60947-5-1 and IEC 60947-1 | 12006ENI01 | - | 2012-12-10 |

Table 2: Documentation

5 Performance and Result of Tests

5.1 Test Reports

Following test reports were issued by TÜV SÜD Rail GmbH or other accredited test laboratories.

| No. | Title | Document-No./ File identifier | Revision | Date |
|------|--|--|----------|------------|
| [R1] | Certifikate TÜV SÜD on Functional Safety | Z10 13 01 38717 032 | - | 2013-01-29 |
| [R2] | Report on Certification ([R1]) | SA84755C | 1.1 | 2013-07-09 |
| [R3] | Certifikate TÜV SÜD on EC Machinery Directive 2006/42/EC | M8B 13 01 38717 033 | - | 2013-01-29 |
| [R4] | Report on Certification ([R3]) | SA84761C | 1.0 | 2013-01-29 |
| [R5] | Annex to [R2] and [R4] | SA84755C-A1 | 1.1 | 2013-07-09 |
| [R6] | Technical Report | SA84755T | 1.1 | 2013-07-09 |
| [R7] | Checklist NFPA79:2012 | Chklist_2014-02-27_ NFPA79_Safety_nG_ V_1_2.docx | 1.2 | 2014-03-13 |

Table 3: Test results

5.2 Description of the Assessment

Based on the Checklist for NFPA 79 compliance [R7], TÜV SÜD Rail GmbH has assessed the test documents [D1] - [D8] for the Safety Components / Safety Control Gears SIRIUS 3SK1.

Result:

The results and completeness of the tests performed and documented by the customer have been verified and compared with the requirements of NFPA79. The necessary tests for an approval in accordance to NFPA 79:2012 have been performed and documented adequately.

5.3 Identification

The device types listed in Table 4 by nomenclature, order number (MLFB), HW revision and FW revision were subject to testing. Devices indicating no FW revision consist of hardware only.

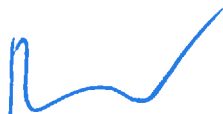
| Device type | Output type | Input range | MLFB | | HW Rev. | FW Rev. |
|-----------------------------|-------------|-------------------|---------------------|----------------------|---------|---------|
| | | | screw-type terminal | spring-type terminal | | |
| Standard | relay | 24 V AC/DC | 3SK1111-1AB30 | 3SK1111-2AB30 | E01 | - |
| | | 110 – 240 V AC/DC | 3SK1111-1AW20 | 3SK1111-2AW20 | E01 | - |
| Advanced | electronic | 24 V DC | 3SK1112-1BB40 | 3SK1112-2BB40 | E02 | V.1.1.0 |
| | | 24 V DC | 3SK1120-1AB40 | 3SK1120-2AB40 | E02 | V.1.1.0 |
| Advanced | relay | 24 V DC | 3SK1121-1AB40 | 3SK1121-2AB40 | E01 | V.1.0.0 |
| | | 24 V DC | 3SK1121-1CB41 | 3SK1121-2CB41 | E01 | V.1.0.0 |
| | | 24 V DC | 3SK1121-1CB42 | 3SK1121-2CB42 | E01 | V.1.0.0 |
| | | 24 V DC | 3SK1121-1CB44 | 3SK1121-2CB44 | E01 | V.1.0.0 |
| | electronic | 24 V DC | 3SK1122-1AB40 | 3SK1122-2AB40 | E02 | V.1.1.0 |
| | | 24 V DC | 3SK1122-1CB41 | 3SK1122-2CB41 | E02 | V.1.1.0 |
| | | 24 V DC | 3SK1122-1CB42 | 3SK1122-2CB42 | E02 | V.1.1.0 |
| | | 24 V DC | 3SK1122-1CB44 | 3SK1122-2CB44 | E02 | V.1.1.0 |
| Contact extension 4 RO | relay | 24 V DC | 3SK1211-1BB40 | 3SK1211-2BB40 | E01 | - |
| | | 24 V AC | 3SK1211-1BB00 | 3SK1211-2BB00 | E01 | - |
| | | 110 – 240 V AC/DC | 3SK1211-1BW20 | 3SK1211-2BW20 | E01 | - |
| Contact extension 3RO Power | - | 24 V DC | 3SK1213-1AB40 | 3SK1213-2AB40 | E01 | - |
| | | 115 V AC | 3SK1213-1AJ20 | 3SK1213-2AJ20 | E01 | - |
| | | 230 V AC | 3SK1213-1AL20 | 3SK1213-2AL20 | E01 | - |
| Sensor extension | - | 24 V DC | 3SK1220-1AB40 | 3SK1220-2AB40 | E01 | V.1.0.0 |

Table 4: EuT type identification

6 Summary

The Safety Components / Safety Control Gears SIRIUS 3SK1 complies with the relevant requirements of NFPA 79, if the conditions and restrictions of the related user manuals are met.

Application specific requirements of NFPA 79 which are not part of this assessment shall be regarded for the safety instrumented system on site.



i.V. Matthias Ramold
Reviewer



i.A. Tomislav Paradzik
Project Manager