

**Report on the assessment of the modifications of the Speed Monitoring Safety Relay
MSR57P of Rockwell Automation Inc.**

Report-No.: 968/EZ 335.01/09

Date: 2009-05-04

Pages: 3

Test object: Speed Monitoring Safety Relay
Type: MSR57P

Customer: Rockwell Automation
6400 West Enterprise Drive
Mequon, WI 53092
United States of America

Manufacturer: Rockwell Automation
6400 West Enterprise Drive
Mequon, WI 53092
United States of America

Order-No./Date: 7000029731 dated 2009-04-24

Test Institute: TÜV Rheinland Industrie Service GmbH
Automation, Software and Information Technology (ASI)
Am Grauen Stein
51105 Köln
Germany

Department: Automation, Software and Information Technology (ASI)

TÜV-Offer-No./Date: 968/151/09 dated 2009-04-17

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Inspector: Dipl.-Ing. Thomas Steffens

Test location: see Test Institute

Test duration: May 2009

The test results are exclusively related to the test samples.

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1. Scope

This report documents the assessment of the modifications carried out at the already type approved Speed Monitoring Safety Relay MSR57P of Rockwell Automation Inc.

It shall be established, that the device under test meets further the functional and safety related requirements of PL e and category 4 according to EN ISO 13849-1 as well as of SIL 3 according to IEC 61508 / EN 62061.

2. Standards forming the basis for the requirements

- [N1] EN ISO 13849-1:2008
Safety of machinery - Safety-related parts of control systems
Part 1: General principles for design
- [N2] EN 60204-1:2006
Safety of machinery - Electrical equipment of machines
Part 1: General requirements
- [N3] EN 50178:1997
Electronic equipment for the use in power installations
- [N4] EN ISO 13850:2006
Safety of machinery; Emergency stop, Principles for design
- [N5] EN 62061:2005
Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems
- [N6] IEC 61508 Part 1-7:1998 and 2000
Functional safety of electrical/electronic/programmable electronic safety-related systems
- [N7] IEC 61800-5-2:2007
Adjustable speed electrical power drive systems
Part 5-2: Safety requirements-Functional

3. Test object

3.1 Identification of the test object

The test object is described in detail in the report on the type approval 968/EZ 335.00/08.

SW: V 1.005.001

HW: V 01

3.2 Documentation

- SMSC_FunctionalTestReport_v1p3.doc
- V0p16_Impact Analysis_FW_V1p4p1 to V1p5p1.xls
- v1_005_001_ReleaseNotes.doc
- Release Note, 440R-RN001_-EN-P_042809.pdf
- Review Differences, Changes v1_004_001 to v1_005_001.chm
- SMSC Functional Test Results, MSR57_FT_V1_005_001.chm

3.3 Test sample

The assessment has been performed based on the provided documents. All necessary tests for verification have been done by the manufacturer.

3.4 Previous test reports

Report-No.: 968/EZ 335.00/08 dated 2008-12-12

4. Assessment of the modifications

Faults in the Firmware of the MSR57P have been identified, they are described and assessed in the document "V0p16_Impact Analysis_FW_V1p4p1 to V1p5p1.xls". The majority of the faults has solely an impact on the reliability of the system and has not effect on the safety.

Furthermore a code clean up has been carried out that refer to minor changes in comments, preparation for future changes and removal of obsolete code.

It has also been identified that if the dual channel inputs are configured for 3s discrepancy time, the MSR57P works not as specified in the "Functional Requirements Specification". In case that the discrepancy time has been increased by an input fault, a reset was possible without that both inputs were off at the same time before.

This fault has been assessed as safety related.

Due to this the firmware has been adapted such that now, as specified, both inputs must be off after an input fault occurred, before a reset will be accepted in order to branch into monitor motion state.

Moreover modifications have been performed in order to fix the faults that refer to the reliability of the system.

In order to provide the evidence that MSR57P fulfils further the requirements of the standards mentioned in chapter 2 tests of the type approval have been repeated as determined in the impact analysis.

All tests have been positively completed and the results are present at the Test Institute.

The tests have been assessed as sufficient in order to show that the modifications have no negative impact on the safety.

The test results are accepted by the Test Institute.

In order to update existing products by the customer a document has been provided that describes the procedure of the update process in detail.

This document has been assessed by the Test Institute with the result that a competent person can carry out the update of the devices based on the described procedure. As the boot code is not affected by the modification it can be assumed that this process of updating will not introduce any additional safety related faults.

5. Summary

The assessment of the modifications of the already type approved MSR57P, manufactured by Rockwell Automation, came to the result, that the requirements of the applicable standards, which are listed in clause 2, are further met.

Hence the MSR57P can be further used in applications up to SIL 3 according IEC 61508 / EN 62061 / 61800-5-2 as well as up to category 4 and PL e according to EN ISO 13849-1 depending on the configuration and parameterization.

The information for a safe use are present in the belonging user documentation.

Cologne, 2009-05-04
 TIS/ASI/Kst. 968-stf-nie

The expert


 Dipl.-Ing. Thomas Steffens

Report released after review
 Date: 2009-05-04


 Dipl.-Ing. Stephan Häb