

**Report of the approval of different changes of
Safety Manager R131.1**

Report-No.: 968/EZ 195.07/08

Date 2008-04-14

Pages: 6

Test object: Safety Manager R131.1

Customer/Manufacturer: Honeywell Safety Management Systems
Rietveldenweg 32A
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The Netherlands

Order-No./Date: Project 740105 dated 2005-09-20
Email dated 2008-01-04

Test Institute: TÜV Rheinland Industrie Service GmbH
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TÜV-Offer-No./Date 968/348/07 dated 2007-12-05

TÜV-Order-No./Date: 9899710 dated 2008-01-11

Inspectors: Dipl.-Ing. Andreas Hesse

Test location: see Test Institute and manufacturer

Test duration: April 2008

The test results are exclusively related to the test samples.

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1. Scope

In the following report the results of the approval of the changes to the Safety-Manager are presented.

The report is based on the previous reports listed in chapter 3.4.

It is described, which tests were performed, who performed them and which results were obtained.

2. Standards forming the basis for the requirements

Functional Safety

- [S1] IEC 61508, parts 1 - 7:2000
Functional safety of electrical/electronic/programmable electronic safety-related systems
- [S2] EN 954-1/1996 Safety of machinery, Safety related parts of control systems
Part 1: General principles of design

Application specific

- [S3] EN 50156-1:2004
Electrical Equipment for Furnaces
- [S4] IEC 61511:2004
Safety Instrumented Systems for the process industry sector
- [S5] NFPA 72:2002
National Fire Alarm Code Handbook
- [S6] NFPA 85:2007
Boiler and Combustion Systems Hazards Code
- [S7] EN 54-2:1997
Fire Detection and Fire Alarm Systems Control and indicating equipment
- [S8] EN 54-4:2003
Fire Detection and Fire Alarm Systems
- [S9] EN 298:2003
Automatic gas burner control systems for gas burners and gas burning appliances with or without fans
- [S10] IEC 62061:2005
Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems
- [S11] ISO 13849-1:2006
Safety of machinery - Safety-related parts of control systems -
Part 1: General principles for design

Electrical safety and resistance against environmental conditions

- [S12] IEC 61131-2:2007
Programmable Controllers

- [S13] IEC 61010-1:2001
 Safety requirements for electrical equipment for measurement, control and laboratory use

Climate

- [S12] IEC 61131-2:2003 Programmable Controllers
- | | | |
|----------------|-------------------------------|----------------------|
| IEC 60068-2-1 | Test Ab and Ad: Cold | (part of EN 61131-2) |
| IEC 60068-2-2 | Test Bb and Bd: Dry heat | (part of EN 61131-2) |
| IEC 60068-2-14 | Test N: Change of temperature | (part of EN 61131-2) |
| IEC 60068-2-30 | Test Db: Damp heat, cyclic | (part of EN 61131-2) |
| IEC 60068-2-32 | Test Ed. Free fall | (part of EN 61131-2) |

Shock/Vibration

- [S12] IEC 61131-2:2003 Programmable Controllers
- | | | |
|----------------|--------------------|----------------------|
| IEC 60068-2-6 | Test Fc: Vibration | (part of EN 61131-2) |
| IEC 60068-2-27 | Test Ea: Shock | (part of EN 61131-2) |

EMC/EMI

- [S12] IEC 61131-2/2003 Programmable Controllers
- | | |
|-------------------------|----------------------|
| EN 55011 | (part of EN 61131-2) |
| IEC 61000-4-2, ESD | (part of EN 61131-2) |
| EN 61000-4-3, RFI | (part of EN 61131-2) |
| EN 61000-4-4, Burst | (part of EN 61131-2) |
| EN 61000-4-5, Surge | (part of EN 61131-2) |
| EN 61000-4-6, cond. RFI | (part of EN 61131-2) |
| EN 61000-4-8, Magnetic | (part of EN 61131-2) |

3. Identification of the test object

3.1 History and test objects

The initial certification and changes were documented in the test reports listed in chapter 3.4.

After that some changes have been carried out to improve the systems behaviour.

3.2 Product and test documents

The documentation has been provided to the Test Institute electronically.

For each change a PAR (Product Anomaly Report) has been carried out.

The documents are stored at the Test Institute.

3.3 Test samples

No test samples were required.

3.4 Previous test reports

- [T1] Report of the type approval of Safety Manager
Report-No.: 968/EZ 195.00/05, Date: 2005-03-04
- [T2] Report of the approval of different changes of Safety Manager
Report-No.: 968/EZ 195.01/05, Date: 2005-07-15
- [T3] Report of the approval of different changes of Safety Manager
Report-No.: 968/EZ 195.02/05, Date: 2005-10-04
- [T4] Report of the approval of SafeNet and different changes of Safety Manager
Report-No.: 968/EZ 195.03/06, Date: 2006-08-04
- [T5] Report of different changes of Safety Manager V110.5
Report-No.: 968/EZ 195.04/06, Date: 2006-11-27
- [T6] Report of different changes of Safety Manager V110.6
Report-No.: 968/EZ 195.05/07, Date: 2007-05-14
- [T7] Report of the approval of different changes of Safety Manager R120.3/R120.4
Report-No.: 968/EZ 195.06/07, Date: 2007-10-11

4. Tests and test results

4.1 General

The measuring and test equipment, which has been used by the TÜV Rheinland Group in the tests described in the following, is subject to regular inspection and calibration. Only devices with valid calibration have been used. The devices used in the various tests are recorded in the inspector's documentation.

All considerations concerning uncertainty of the measurements, so far applicable, are stated in the inspector's documentation, too.

In cases where tests have been executed in an external test lab or in the test lab of the manufacturer and where the results of these tests have been used within the here documented approval, this has occurred after a positive assessment of the external test lab and the achieved test results in detail according to the Quality Management procedure QMA 3.310.05.

4.2 Documentation of the changes

Each change has been documented in a PAR (Product Anomaly Report). The report contains information about:

- Reason of change
- Impact analysis
- Test result (if required)

In detail the following PAR's have been reviewed:

No.	PAR No.	Rev.	Date
1	PAR3009	1.0000	2008-04-14
2	PAR3064	1.0011	2008-04-01
3	PAR3020	1.0015	2008-03-04

No.	PAR No.	Rev.	Date
4	PAR2964	1.0000	2008-04-14
5	PAR1408	1.0025	2008-02-07
6	PAR2412	1.0031	2008-04-04
7	PAR2725	1.0024	2008-02-25
8	PAR2957	1.0011	2008-02-07
9	PAR1483	1.0027	2008-04-04
10	PAR3089	1.0001	2008-04-03
11	PAR3127	1.0001	2008-04-08

Result:

The documents contain the necessary information to understand the reason for change.

The way of documentation fulfils the requirements of IEC 61508.

4.3 Assessment of the changes

There were some items, which may affect the functional safety.

All items were solved either by change of the software or by description of a workaround. All items were retested, as far as required.

The results are accepted by the Test Institute.

The examination was finished with a positive result.

4.4 Application standards

The results presented in report [T1] were not affected by the changes.

Thus the results are further valid.

Additional standards have been taken into consideration:

4.4.1 IEC 62061:2005

The Safety Manager fulfils the requirements for safety integrity level 3 in accordance with IEC 61508.

Hence, the system can be used within the scope of EN 62061.

The user still needs to comply with all other requirements from the standard including requirements that have an effect on the operation of the safety system.

The end-user shall refer to the safety manual.

4.4.2 ISO 13849-1:2006

The Safety Manager is suitable for applications requiring category 4 of EN 954-1 as shown in the previous qualifications (see Chapter 3.4).

The manufacturer has calculated the failure rate of each component (controller, I/O-cards).

All safety related components have a $DC_{avg} > 99\%$ and a $MTTFd > 100$ Years.

Result:

The Safety Manager fulfils the requirements of PL e according to ISO 13849-1:2006

5. **Summary**

During the evaluation of the changes for the Safety Manager R131.1 no infringement of the functional and safety-related requirements in the applied standards could be found.

Therefore the Safety Manager can be used in safety related applications for SIL 1, SIL 2 or SIL 3 according to IEC 61508, Category 1 to 4 according to EN 954-1, or PL a to PL e according to ISO 13849-1.

Observance must be given to the installation conditions and application notes defined in the Operating and Instruction Manuals.

The additional requirements as listed in [T1] and [T3] have to be taken into consideration.

Actual information about the certification status of the Safety Manager and actual releases of HW and SW components can be obtained from the homepage of the Test Institute. Please refer to the "List of type approved PES" published on: <http://www.tuvasi.com/>.

Cologne, 2008-04-14
TIS/ASI/Kst. 968 he-nie

The inspector



Dipl.-Ing. Andreas Hesse